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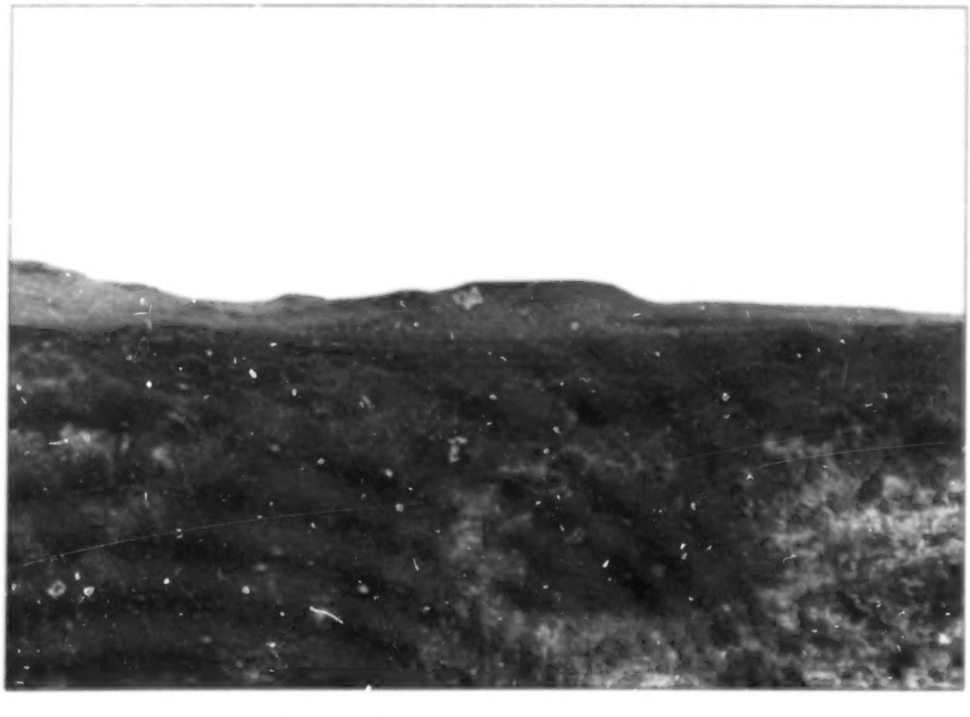
U.S. Department of the Interior
Bureau of Land Management

Lakeview Resource Area / Lakeview District Office
1000 South 9th Street
P.O. Box 151
Lakeview, Oregon 97639

U.S. Fish and Wildlife Service
Hart Mountain National Antelope Refuge
Post Office Building
Lakeview, Oregon 97630

August 1997

BEATY BUTTE ALLOTMENT MANAGEMENT PLAN AND DRAFT ENVIRONMENTAL IMPACT STATEMENT



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As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering the wisest use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

BLM/OR/WA/PL-97/032+1792

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Lakeview District Office
P.O. Box 151 (1000 Ninth Street S.)
Lakeview, Oregon 97630

IN REPLY REFER TO
1793/4120 (015)

August 15, 1997

Dear Interested Public:

Enclosed for your review is the proposed Beaty Butte Allotment Management Plan (AMP) and Draft Environmental Impact Statement (DEIS). The Bureau of Land Management (BLM) has prepared this document in accordance with the Federal Land Policy and Management Act of 1976 and the National Environmental Policy Act of 1969. The purpose of this DEIS is to analyze the potential environmental impacts of five management alternatives on BLM-administered lands within the allotment.

This AMP process is related to, but separate from another on-going proposal transferring management jurisdiction of the Shirk Ranch and other isolated parcels from U.S. Fish and Wildlife Service Management (USFWS) to the BLM and transferring management jurisdiction of parcels of BLM-administered lands within and outside of the allotment to the USFWS. The impacts of transferring jurisdiction will be analyzed by a separate planning/National Environmental Policy Act document, whereas the impacts of how those lands would be managed following the transfer is evaluated in this AMP/DEIS. Due to the inter-relatedness of these actions, the USFWS is acting as a cooperating agency in the development of the attached AMP/DEIS.

I would appreciate your comments on this analysis. The following types of comments would be most helpful in the decision-making process:

1) Comments that are as specific as possible (include page numbers, section headings, etc. that relate to the comment).
2) Comments that address the appropriateness of the alternatives.
3) Comments that identify unaddressed issues.
4) Comments that provide new information or data.
5) Comments that address the adequacy of the analysis.
6) Comments that identify errors in the data or analysis (provide references).

Two public meetings are tentatively scheduled at 7:00 pm on the following nights:

August 26 - BLM, Lakeview District Office conference room, 1000 South Ninth Street, Lakeview, Oregon.
August 27 - Bend Welcome Center, 63085 North Highway 97, Bend, Oregon.

Any changes in meeting times, locations, or dates will be announced in local newspapers and through a separate mailing.

Comments should be submitted in writing to Mr. Scott Florence, Area Manager, Bureau of Land Management, Lakeview Resource Area, Lakeview District, P.O. Box 151, Lakeview, OR 97630, within 60 days after the U.S. Environmental Protection Agency publishes its Notice of Availability of this DEIS in the *Federal Register*, which is expected on or about [illegible] 1 1997

Please note that comments, including the names and street addresses of respondents, will be available for public review at the above address during regular business hours (7:45 am to 4:30 pm), Monday through Friday, except holidays, and may be published as part of the Final EIS. Individual respondents may request confidentiality. If you wish to withhold your name or street address, except for the city or town, from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your comment. Such requests will be honored to the extent allowed by law. However, anonymous comments will not be considered. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

If you have questions concerning the AMP or DEIS process, contact Mr. Dick Mayberry or Mr. Paul Whitman at (541) 947-2177. Thank you for your continued interest in the management of your public lands.

Sincerely,

M. Joe Tague

M. Joe Tague
Acting District Manager

Enclosure (as stated)

U.S. Department of the Interior
Bureau of Land Management
and
U.S. Fish and Wildlife Service

BEATY BUTTE ALLOTMENT MANAGEMENT PLAN AND DRAFT ENVIRONMENTAL IMPACT STATEMENT

Prepared by

Lakeview Resource Area
Lakeview District Office
in cooperation with
Hart Mountain National Antelope Refuge

August 1997

Joe Tague

Joe Tague
Acting District Manager
Lakeview District Office

Scott R Florence

Scott R. Florence
Area Manager
Lakeview Resource Area

Beaty Butte Allotment Management Plan
and
Draft Environmental Impact Statement

Draft (X) Final ( ) EIS
Department of the Interior.
Bureau of Land Management, Lakeview District (Lead Agency)
and U.S. Fish and Wildlife Service,
Hart Mountain National Antelope Refuge (Cooperating Agency)

1 Type of Action: Administrative (X), Legislative ( )

2 Abstract: This document covers the development of a proposed allotment management plan (AMP) and Draft Environmental Impact Statement (DEIS) for the Beaty Butte allotment (0600). The Bureau of Land Management (BLM) is the lead agency and the US Fish and Wildlife Service (USFWS) is a cooperating agency. This allotment occurs within the BLM Lakeview District and covers over 500,000 acres in southeastern Lake County and southwestern Harney County, Oregon. This AMP has been developed to provide a rest-rotation grazing system as a means of better managing livestock distribution and use within the allotment, while at the same time protecting other significant resource values. A total of five alternative plans covering a wide range of management actions were analyzed in detail in this EIS. These include:

Alternative 1 (No Action) - managing the area in accordance with existing management direction which includes an extensive list of proposed range improvement projects (fencing, water developments, burning, seeding, and brush control using herbicides).

Alternative 2 - implementing an 11-pasture, 2-herd modified rest-rotation grazing system requiring an extensive number of proposed range improvement projects (fencing, water developments, prescribed fire and seeding).

Alternative 3 - implementing a 10-pasture, 2-herd modified rest-rotation grazing system. This alternative requires a large number of proposed range improvement projects (fencing, water developments, prescribed fire, and seeding) though less than Alternatives 1 and 2.

Alternative 4 - This is the **preferred alternative**, and is similar to Alternative 2, except that management jurisdiction of the Shirk Ranch and other isolated parcels inside and outside of the allotment (currently managed by the U.S. Fish and Wildlife Service) would now be managed by the BLM (approximately 2,340 acres) as part of the proposed grazing system. Portions of the existing Jack Lake pasture (approximately 7,870 acres) would be managed by the U.S. Fish and Wildlife Service and livestock grazing would be eliminated on about 17,070 acres. The types and quantities of range improvement projects would be similar to Alternative 2.

Alternative 5 - eliminating livestock grazing from public lands throughout the allotment. Prescribed fire projects would be similar to Alternatives 2, 3, and 4.

3 Comment Period: The comment period on this document will last 60 days and end on the date specified in the cover letter at the front of this document.

4 For further information contact:

Paul Whitman, Planning and Environmental Coordinator
Bureau of Land Management
Lakeview District
P.O. Box 151
Lakeview, OR 97630
Ph. 541-947-6110
email: pwhitman@or.blm.gov

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Summary

The Lakeview District of the Bureau of Land Management (BLM) has prepared this allotment management plan (AMP) to address allotment-specific grazing management within the Beaty Butte allotment (0600). This AMP has been developed to provide a rest-rotation grazing system as a means of better managing livestock distribution and use within the allotment, while at the same time protecting other significant resource values. A total of five alternative plans covering a wide range of management actions were analyzed in detail in this EIS. These are discussed in greater detail in Chapter 2.

Alternative 1 (No Action) consists of managing the area in accordance with existing management direction in the Warner Lakes Management Framework Plan (BLM, 1983) and Lakeview Grazing Management Final Environmental Impact Statement (EIS; BLM, 1982a). This includes implementing a rest-rotation grazing system requiring approximately 72.3 miles of fence, 2 spring developments, 20 miles of pipelines, 52 reservoirs, 18 waterholes, 41,200 acres of burn and seed treatment, and 37,500 acres of brush control using herbicide. No livestock grazing would be allowed on the Shirk Ranch and other isolated parcels of the Hart Mountain National Antelope Refuge located within the allotment. The U.S. Fish and Wildlife Service would need to fence these isolated parcels to remove grazing from these areas.

Alternative 2 consists of implementing an 11-pasture, 2-herd modified rest-rotation grazing system requiring about 38 miles of fence, 1 spring development, 7 miles of pipelines, 2 new reservoirs, 3 rebuilt reservoirs, 79,000 acres of prescribed fire and natural revegetation, and 6,500 of prescribed fire and reseeding. No livestock grazing would be allowed on the Shirk Ranch and other isolated parcels of the Hart Mountain National Antelope Refuge located within the allotment. The U.S. Fish and Wildlife Service would need to fence these isolated parcels to remove grazing from these areas.

Alternative 3 consists of implementing a 10-pasture, 2-herd modified rest-rotation grazing system. This alternative would require about 20 miles of fence, 1 spring development, 7 miles of pipelines, 1 new reservoir, 3 rebuilt reservoirs, 79,000 acres of prescribed fire and natural revegetation, and 6,500 of prescribed fire and reseeding. No livestock grazing would be allowed on the Shirk Ranch and other isolated parcels of the Hart Mountain National Antelope Refuge located within the allotment. The U.S. Fish and Wildlife Service would need to fence these isolated parcels to remove grazing from these areas.

Alternative 4 is the **preferred alternative** and is similar to Alternative 2, except that management jurisdiction of the Shirk Ranch and other isolated parcels inside and outside of the allotment (currently managed by the U.S. Fish and Wildlife Service) would now be managed by the BLM (approximately 2,040 acres) as part of the proposed grazing system. Portions of the existing Jack Lake pasture (approximately 7,870 acres) would be managed by the U.S. Fish and Wildlife Service and livestock grazing would be eliminated on about 17,070 acres. The types and quantities of range improvement projects required under this alternative would be similar to Alternative 2, except an additional 1.5 miles of fence may be required to divide the Shirk Ranch into 2 separate pastures.

Alternative 5 consists of eliminating livestock grazing from public lands throughout the allotment, though grazing could still occur on private lands within the allotment. Approximately 79,000 acres of prescribed fire and natural revegetation would be conducted similar to Alternatives 2, 3, and 4. Existing pasture boundary fences could be removed. Existing spring developments and exclosures would be maintained. The jurisdictional transfer would not be needed, nor would the U.S. Fish and Wildlife Service need to fence their isolated parcels of land.

The potential impacts of each alternative are summarized, by resource, in Table S-1.

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Table S-1. Summary of Potential Impacts by Alternative.

	Alternative 1 No Action (Implement MFP)	Alternative 2 Eleven Pasture System	Alternative 3 Current Mgmt with Range Improvements	Alternative 4 Jurisdictional Transfer (Preferred Alternative)	Alternative 5 No Grazing
Hydrology and Water Quality	Water storage would be increased. Water would be removed from the groundwater table via a well near Guano Lake. Reduced overland flow, sedimentation, and nutrient input to area waters. Water quality may be protected.	Some increase in bank stability along Guano Creek. Reduced overland flow, sedimentation, and nutrient input to area waters. Water quality may be protected.	Similar to Alternative 2.	Similar to Alternative 2, except irrigation at Shirk Ranch would spread water over existing meadows rather than storing in Shirk Lake. Guano Creek water quality would improve.	Additional water would be stored in the soil and litter, reducing spring runoff and increasing bank stabilization. Waterholes and reservoirs would store less water. Groundwater would not be removed from the well at Guano Lake. Livestock influence on water quality would no longer occur.
Soil	Residual ground cover would increase in most areas, but vegetation treatments would temporarily remove it in others; erosion would decrease. Trampling, hoof action, and compaction would be increased in localized areas.	Soils around existing waterholes would be impacted by grazing. Impact severity would vary widely by soil type. Prescribed fire would decrease infiltration, remove surface cover, and make nutrients more available to plants in the short-term.	Impacts would be similar to Alternative 2, except for claypan soils in the South pasture.	Impacts would be similar to Alternative 2, except for the lands involved in the exchange. Shirk Ranch soils would have increased trampling effects while about half of the Jack Lake pasture would no longer experience trampling effects.	Erosion would be less than all other alternatives. Litter cover would increase over time.

Air Quality	Prescribed fire would add water vapor, carbon dioxide, carbon monoxide, nitrogen oxides, volatile organic compounds, and particulate matter to the air for a short period of time.	Impacts would be similar to Alternative 1.	Impacts would be similar to Alternative 1.	Impacts would be similar to Alternative 1.	Impacts would be similar to Alternative 1.
Aquatic, Riparian, and Wetland Vegetation	Very little change from existing conditions expected.	Lentic sites would improve. Lotic sites would change very little.	Impacts would be similar to Alternative 2, but would occur more slowly.	Impacts would be similar to Alternative 2, but would occur more rapidly along Guano Creek.	Riparian vegetation would improve more rapidly with greater cover and diversity.
Terrestrial Vegetation	Would partially meet terrestrial vegetation objectives.	Would increase plant diversity and vigor.	Impacts would be similar to Alternative 2.	Impacts would be similar to Alternative 2.	Impacts would be similar to Alternative 2.
Cryptobiotic Crusts	New fences could concentrate cattle and wild horses resulting in loss of crusts.	New fences could concentrate cattle and wild horses resulting in loss of crusts. Fire effects are unknown.	Impacts would be similar to Alternative 2.	Impacts would be similar to Alternative 2, except for the portion of Jack Lake pasture excluded from grazing. Impacts there would be similar to Alternative 5.	Impacts caused by grazing would not occur. Fire effects are unknown.
Noxious Weeds	Risk of increasing noxious weeds is low. Weed prevention/control would continue in accordance with an existing noxious weed control program.	Impacts would be similar to Alternative 1.	Impacts would be similar to Alternative 1.	Impacts would be similar to Alternative 1, except the risk would be further reduced on the portion of Jack Lake pasture where livestock is removed.	The risk of noxious weed spread is lowest compared to the other alternatives. Weed control would continue similar to Alternative 1.

Table S-1. Summary of Potential Impacts by Alternative, continued.

	Alternative 1 No Action (Implement MFP)	Alternative 2 Eleven Pasture System	Alternative 3 Current Mgmt with Range Improvements	Alternative 4 Jurisdictional Transfer (Preferred Alternative)	Alternative 5 No Grazing
Livestock Grazing	Livestock handling logistics would increase. More riders and pasture moves would be required. New fences would require increased maintenance.	Riders would be needed to keep cattle moving around the pasture and to move between pastures.	More time would be spent by riders moving cattle compared to the existing situation and Alternative 2.	Impacts would be similar to Alternative 2, except use of the Shirk Ranch would provide an area to bunch up cattle at the end of the season in prep-aration for gathering. Operation costs would be higher in order to irrigate Shirk Ranch. Loss of AUMs from the Jack Lake pasture would be mitigated by grazing the Shirk Ranch	About 14,000 AUMs currently grazed and up to 26,121 AUMs of specified livestock use would be permanently lost. Between 2,000 and 4,000 cows would require other pasture lands or would have to be sold.
Wild Horses	Horse movement would be restricted compared to existing conditions, limiting the ability to find water. Increased stress could occur and breeding more difficult. Water developments and vegetation treat-ments would benefit horses.	Impacts would be similar to Alternative 1, but not as severe due to fewer fences. Prescribed burns would benefit horses.	Impacts would be similar to Alternatives 1, 2, and 4, but not as severe due to only one cross fence which could be bypassed. Prescribed burns would benefit horses.	Impacts would be similar to Alternative 2	Horses would have the greatest freedom of movement. There would be fewer water sources compared to other alternatives, but competition with livestock would be removed. Prescribed burns would benefit horses.

Wetland Habitats	Protected water sites would have in-creased cover every year. Unprotected sites would have increased cover on rest years. Nesting habitat would be improved in rested and deferred use pastures, but not in the early use pastures or pastures used late the previous year.	Similar to Alternative 1, but with greater area rested or deferred each year.	Similar to Alternative 2, but with less area rested each year. More area is rested than in Alternative 1.	Similar to Alternative 2, but with more migratory habitat available at the Shirk Ranch. Nesting habitat in Jack Lake Riparian pasture would be improved and available every year.	Would have greatest benefit to nesting waterfowl and waterbirds.
Fish Habitat	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.
Terrestrial Habitat	Pronghorn antelope habitat would be improved, but fencing would create additional barriers to movement.	Sage grouse and pronghorn antelope habitat would be improved by resting areas. Fewer barriers to pronghorn antelope movement than in Alternative 1.	Similar to Alternative 2, but with fewer barriers to pronghorn antelope movement.	Similar to Alternative 2. Would remove livestock conflicts between pronghorn antelope and sage grouse in Jack Lake Riparian pasture.	Removes barriers to pronghorn antelope movement and improves forage and cover for wildlife for the short-term. Habitat values over long term could decrease as density, diversity, and availability of young grasses and forbs decreases.
Threatened and Endangered Species	No impacts.	No impacts.	No impacts.	No impacts.	No impacts.

Table S-1. Summary of Potential Impacts by Alternative, continued.

	Alternative 1 No Action (Implement MFP)	Alternative 2 Eleven Pasture System	Alternative 3 Current Mgmt with Range Improvements	Alternative 4 Jurisdictional Transfer (Preferred Alternative)	Alternative 5 No Grazing
Special Status Species - Plants	Those plant species in lower Guano Creek would not be impacted. Monitoring is currently on-going to determine if grazing is negatively impacting Crosby's buckwheat and grimy ivesia. Should graz-ing be determined to be a threat, manage-ment would be adjusted. Prescribed fire areas would require surveys prior to implementation.	Impacts would be similar to Alternative 1.	Impacts would generally be similar to Alternative 2.	Impacts would generally be similar to Alternative 2.	Removing the potential threat of livestock grazing would benefit all sensitive plant species. Prescribed fire impacts and survey needs would be similar to Alternative 2.
Special Status Species - Animals	New fences could restrict bighorn sheep movement. Increased livestock concentration around lakebed waterholes would impact sage grouse use of forbs. Potential impacts to pygmy rabbits, burrowing owls, and loggerhead shrikes if vegetation treatment occurs in critical habitats. Sheldon tui chub and Guano Creek trout would not be impacted.	Would positively affect sage grouse by increasing nesting cover and bighorn sheep foraging habitat. Other impacts would be similar to Alternative 1.	Impacts would be similar to Alternative 2.	Impacts would be similar to Alternative 2, except for that portion of Jack Lake pasture excluded from grazing. Sage grouse in this area would benefit initially. Pygmy rabbits would be negatively impacted. Sheldon tui chub and Guano Creek trout would not be impacted.	Livestock removal may allow bighorn sheep to expand. Impacts to pygmy rabbits may be negative. Sage grouse nesting cover would improve initially. Sheldon tui chub and Guano Creek trout would not be impacted.

Wilderness Study Areas	Many of the projects proposed in the MFP could not be constructed as originally planned due to impairment of wilderness values or violation of the wilderness IMP.	In general, most proposed grazing management actions would not improve wilderness values and, in some cases would negatively affect wilderness values. Prescribed fire would improve wilderness values.	Impacts would be similar to Alternative 2.	Impacts would be similar to Alternative 2.	Wilderness values would improve.
Proposed RNA/ ACECs	In absence of fire, shrubs would expand in the Sink Lakes and Hawk Mountain 1 and 2 PRNAs. Grazing impacts would vary from no effect to negative effects.	Grazing impacts at Sink Lakes and Hawk Mountain 1 and 2 PRNAs would vary from little effect to negative effects. Prescribed fires would improve plant diversity.	Grazing impacts would be similar to Alternative 2, but less severe. Prescribed fires would improve plant diversity.	Grazing would be removed from the Sink Lake PRNA allowing for plant recovery around the lakes. Grazing impacts at Hawk Mountain 1 and 2 PRNAs would be similar to Alternative 2. Prescribed fires would improve plant diversity.	Grazing impacts at Sink Lakes PRNA would be similar to Alternative 4. Litter cover and soil conditions would improve at Hawk Mountain 1 and 2 PRNAs. Prescribed fires would improve plant diversity.
Cultural Resources	No impacts to historical resources would occur. Significant impacts to cultural sites could occur, if sites are not avoided. All projects would require site surveys, Section 106 evaluation, Native American consultation, and potentially site mitigation. Prescribed fire could have positive and negative impacts.	No impacts to historical resources would occur. All projects would require site surveys, Section 106 evaluation, Native American consultation, and potentially site mitigation. Prescribed fire could have positive and negative impacts.	No impacts to historical resources would occur. All projects would require site surveys, Section 106 evaluation, Native American consultation, and potentially site mitigation. Prescribed fire could have positive and negative impacts.	Site stabilization work would be needed at Shirk Ranch to protect historical structures. Fire risk to structures would be reduced. All projects would require site surveys, Section 106 evaluation, Native American consultation, and potentially site mitigation. Prescribed fire could have positive and negative impacts.	No impacts to historical resources would occur. Prescribed fire could have positive and negative impacts.

Table S-1. Summary of Potential Impacts by Alternative, continued.

	Alternative 1 No Action (Implement MFP)	Alternative 2 Eleven Pasture System	Alternative 3 Current Mgmt with Range Improvements	Alternative 4 Jurisdictional Transfer (Preferred Alternative)	Alternative 5 No Grazing
Socioeconomics	There would be no impact on area population or demographics. This would be the most expensive alternative to implement ($1.25 million). There would be no significant change in the area economy.	There would be no impact on area population or demographics. This alternative would cost $0.88 million to implement. There would be no significant change in the area economy.	There would be no impact on area population or demographics. This alternative would cost $0.83 million to implement. There would be no significant change in the area economy.	Impacts would be similar to Alternative 2	There would be no impact on area population or demographics. This alternative would be the least expensive ($0.6 million) to implement, but would also result in an annual economic loss to the county ranging from $0.3 to $2.6 million.
Recreation and Visual Resources	Projects would cause minor visual impacts affecting recreation and visual quality. New fences would create barriers to hunters and other off-road vehicle users.	New fences would create barriers to hunters and other off-road vehicle users which could be mitigated by cattle guards. Visual quality would be impacted initially by prescribed fires.	Impacts would be similar to Alternative 2.	Impacts would be similar to Alternative 2, except in that portion of Jack Lake pasture managed by the USFWS. Hunting access/opportunities could be restricted in the future.	Quality of primitive or dispersed camping would improve. Big game hunting opportunities could increase. Prescribed fire impacts would be similar to Alternative 2.

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Chapter 1
Introduction

1.1 Purpose and Need for Action

The Beaty Butte allotment (0600) does not currently have an allotment management plan (AMP). Grazing and other resource management is guided on the broad scale by the goals and objectives of the Warner Lakes Management Framework Plan (MFP) (BLM, 1983) and Lakeview Grazing Management Final Environmental Impact Statement/Record of Decision (BLM, 1982a; 1982b).

Since the Record of Decision was issued, the allotment has been grazed season long. Some attempts were made to rotate grazing in the late 1980's, but rotation was based on moving cattle to various waterholes throughout the grazing season. When the base property was purchased by a consortium of ranchers in 1992, some of the buyers formed a grazing association. The new operators have rotated livestock using herding techniques, and have rested about half of the allotment each year.

An allotment evaluation was completed in December 1994 (BLM 1994a). The evaluation examined the past and current grazing management and the use levels. The evaluation identified resource concerns and areas of interest. The actual livestock grazing use in 1983 until 1989 was close to the level established as the total number of animal unit months (AUMs) of specified grazing (26,121 AUMs) in the 1982 Record of Decision. Utilization levels averaged 30-40%. Since 1989, the amount of livestock use has been less then half the specified number of AUMs, and the utilization levels have averaged under 25%. The evaluation summarized the Ecological Site Inventory data and found that 55% of the allotment was in Mid-seral stage, 31% in Late seral, and 12% in Early seral. The other available data was summarized and it found the trend is generally up or static on most of the allotment. The evaluation recommended an allotment management plan be developed with specific plant community objectives, a grazing plan and interdisciplinary monitoring to protect and enhance the existing resources while continuing to graze the allotment at the current total number of AUMs of specified livestock grazing.

An AMP is needed to specify resource goals and objectives specific to the allotment, formalize a grazing management system, describe a monitoring/evaluation system to determine if management practices are meeting the stated goals/objectives, and identify projects needed to achieve management goals/objectives for this allotment.

The proposed action is to develop and implement an AMP for the Beaty Butte allotment that meets the MFP goals/objectives of maintaining or improving rangeland conditions across the allotment to the late seral category (based on a four category system of: early seral, mid-seral, late seral, or potential natural community), and formalizes a rest-rotation grazing system. The AMP must coordinate livestock grazing use with the management of the existing Beaty Butte Wild Horse Herd Management Area (HMA), five Wilderness Study Areas (WSA's), four proposed Research Natural Areas/Areas of Critical Environmental Concern (RNA's/ACEC's), wildlife use, recreation use, cultural site protection, threatened/endangered plant protection, and other resource uses.

This activity level plan will not amend the current land use plan, and no decisions made at the Management Framework Plan level will be made in this document (eg, reallocation of forage, designating special management areas, or changing Wild Horse Herd Management Area boundaries). However, this AMP is related to a separate, on-going process amending the Warner Lakes Management Framework Plan involving the transfer of management jurisdiction of approximately 10,932 acres (of which about 7,870 acres falls within the allotment) of BLM-administered lands to the U.S. Fish and Wildlife Service (USFWS) and approximately 5,317 acres (of which about 2,340 acres occurs within the allotment) of USFWS-administered lands (Hart Mountain National Antelope Refuge) to the BLM.

A separate planning and National Environmental Policy Act (NEPA) document will be prepared to evaluate the potential impacts of the jurisdictional land transfer. USFWS lands located along the western boundary of the Hart Mountain National Antelope Refuge which fall within the boundary of the Warner Wetlands Area of Critical Environmental Concern (ACEC) would be managed in accordance with the Warner Lakes Plan Amendment for Wetlands and Associated Uplands (1989c), the Warner Wetlands ACEC Management Plan (BLM, 1990b), and subsequent activity level management plans. Isolated parcels of USFWS land located south of the refuge (i.e. Shirk Ranch) in the Beaty Butte allotment would be managed in accordance with the Warner Lakes Management Framework Plan (BLM, 1983) and Lakeview Grazing Management Final Environmental Impact Statement/Record of Decision (BLM, 1982a; 1982b). Additional details of the management of these parcels is included in this AMP/Draft EIS. All BLM lands transferred to the USFWS would be managed in accordance with the Hart Mountain National Antelope Refuge Comprehensive Management Plan Final Environmental Impact Statement and Record of Decision (USFWS, 1994a, 1994b).

1.2 Location

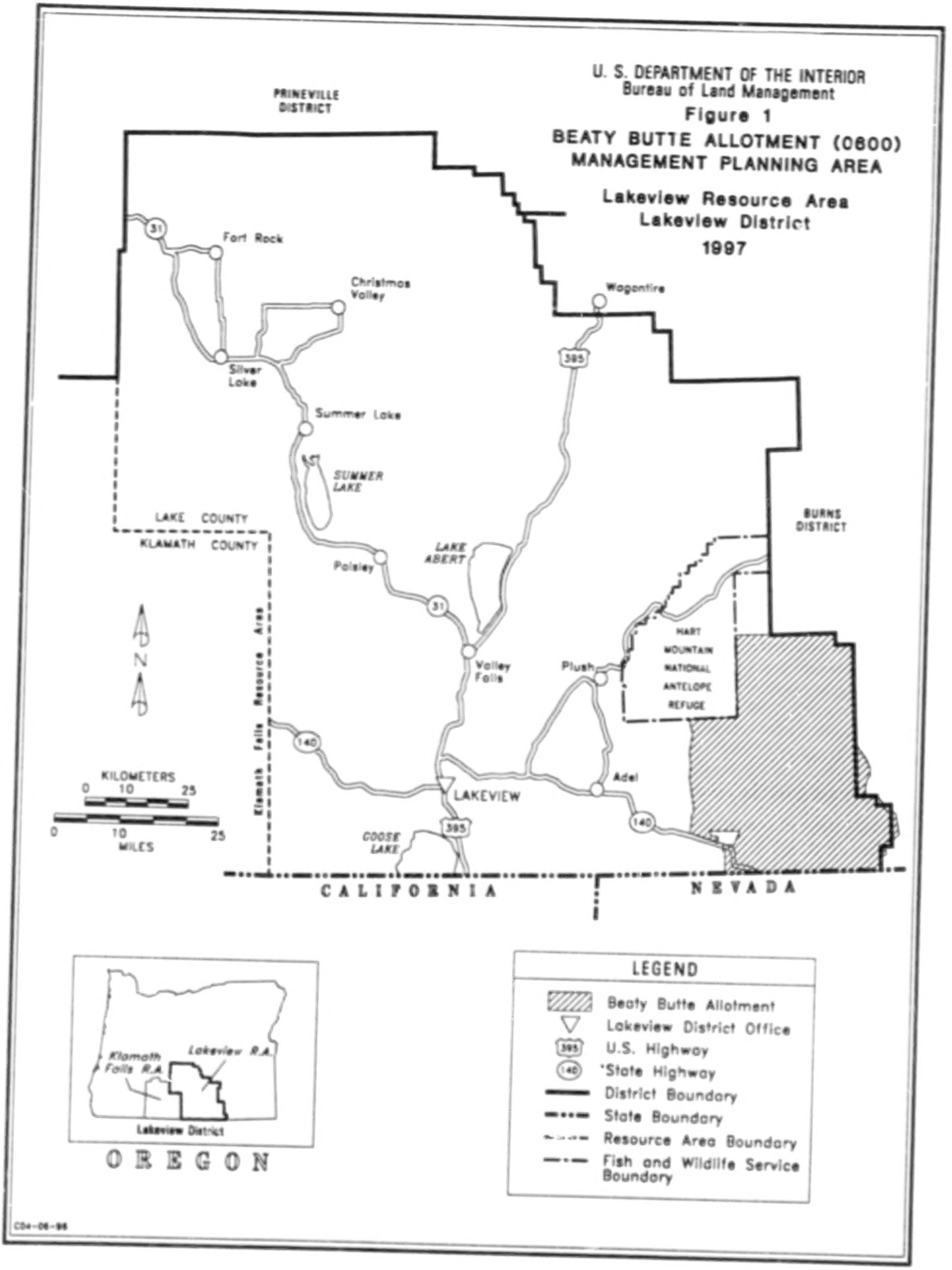
The Beaty Butte allotment includes approximately 506,985 acres of public land, and 37,380 acres of private land. Nearly 56% of the public land (283,900 acres) is located in Harney County and 44% (223,085 acres) is in Lake County. About 69% of the private land (25,860 acres) is in Harney County and 31% (11,520 acres) is in Lake County. The allotment is located east of Adel in southeastern Lake and southwestern Harney Counties, Oregon (Figure 1), about 50 miles east of Lakeview. The southern border of the allotment is the Nevada/Oregon border. Hart Mountain National Antelope Refuge (NAR) borders the northwest portion of the allotment and Sheldon National Wildlife Refuge borders the southern portion of the allotment.

1.3 Conformance with Federal, State, Local, and Tribal Land Use Plans and Policies

1.3.1 Existing Federal Plans

A number of land use or resource management plans have been developed by the BLM and other Federal agencies which relate to or otherwise govern how management is carried out within the allotment planning area. The BLM is responsible for determining if the proposed AMP is in conformance with these plans. The following Federal plans have been identified as applicable to the planning area and unless otherwise noted, are believed to be in conformance with the proposed AMP. Where appropriate, the management direction and previous management decisions set forth by these documents, and the impacts outlined therein, are used to tier analyses performed in this AMP, or are incorporated by reference, and therefore, are not repeated in detail within this document. Therefore, pertinent decisions already established by these documents are not being revisited here, but are mentioned to give the reader a broad perspective of all management activities occurring within the allotment planning area.

- Warner Lakes Management Framework Plan (BLM, 1983) - the proposal is in conformance with respect to need to prepare an AMP. A summary of the management direction outlined in this plan for the allotment is included in Chapter 2 as the description of the No Action Alternative.
- Lakeview Grazing Management Final Environmental Impact Statement (BLM, 1982a) and Record of Decision (BLM, 1982b) - the proposal is in conformance with respect to overall grazing administration, but did not consider impacts of an allotment-specific AMP. A summary of current range management and grazing direction for the allotment is included in Chapter 2 as part of the description of the No Action Alternative.
- Wilderness Studies Management Framework Plan Amendments (BLM, 1982c) - this plan amends the High Desert Management Framework Plan with respect to wilderness issues due to the completion of a state-wide wilderness inventory. The most pertinent section discusses alternative boundary designations for wilderness study areas (WSAs) within the allotment. The document did not include a NEPA or decision document, but rather led to the Environmental Impact Statement and subsequent Record of Decision discussed below.
- Oregon Wilderness Final Environmental Impact Statement (BLM, 1989a) and Summary Report to Congress (BLM, 1991a) - these documents evaluate the potential environmental impacts of wilderness designation and recommended to Congress designation of certain wilderness areas within the State of Oregon, including approximately 80,000 acres in two of five WSAs located partially or completely within the allotment. Pending final designation as wilderness or release from wilderness study by Congress, WSAs are managed in accordance with the Wilderness Interim Management Policy (IMP, BLM, 1995b).



U. S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

Figure 1

BEATY BUTTE ALLOTMENT (0600)
MANAGEMENT PLANNING AREA

Lakeview Resource Area
Lakeview District
1997

- Integrated Noxious Weed Control Program Environmental Assessment (OR-013-93-03) Lakeview Resource Area (BLM, 1994a) and associated Decision Record - these documents cover the environmental impacts of conducting an integrated noxious weed control plan throughout the Lakeview Resource Area, including the Beaty Butte allotment. Of particular relevance to this AMP are known weed infestations within the allotment. This EA is tiered to the following three programmatic FEISs and RODs: Northwest Area Noxious Weed Control Program Final Environmental Impact Statement (BLM, 1985b), Supplement to the Northwest Area Noxious Weed Control Program Final Environmental Impact Statement (BLM, 1987), and Vegetation Treatment on BLM Lands in Thirteen Western States Final Environmental Impact Statement (BLM, 1991b).

- Vegetation Treatment on BLM Lands in Thirteen Western States Final Environmental Impact Statement and ROD (BLM, 1991b) - these documents cover the impacts of the use of prescribed fire, mechanical, manual, biological, and chemical methods to treat rangelands to establish desired vegetation types conditions.

- National Wildland Fire Policy - directs development of plans that address prescribed burning and wildfire suppression to meet resource objectives and reincorporate fire as a component in the ecosystem. A resource area Fire Management Plan is being developed to address wildfire suppression, this AMP addresses prescribed burning.

- Beaty Butte Herd Management Area (HMA) Plan (BLM, 1977), Lakeview District Wild Horse Gather EA (#OR-010-95-10, BLM, 1995c) and associated decisions - these documents direct wild horse management activities within the Beaty Butte HMA including managing horse numbers between 100 and 250 head.

- Site Specific Environmental Assessment Tiered to the 1987 Final Environmental Impact Statement for Rangeland Grasshopper Cooperative Management Program (APHIS, 1995a) - this document covers the periodic need to control grasshopper outbreaks in various rangeland and agricultural areas within Lake County. Currently, no lands within the allotment are identified as needing treatment. However, this could change over time. The lead for this type of action rests with APHIS, but the BLM does cooperate when treatment involves lands under its administration. This EA is tiered to the following programmatic FEIS and ROD: Rangeland Grasshopper Cooperative Management Program Final Environmental Impact Statement (APHIS, 1987).

- Environmental Assessment (EA), Wildlife Damage Management in the Roseburg ADC District in Southwestern Oregon and Record of Decision (APHIS, 1995b) - these documents covers wildlife damage management activities in the Lakeview Resource Area, including the Beaty Butte allotment. APHIS is the lead agency for this action. The BLM served as a cooperating agency in the preparation of this EA and ROD. The ROD requires the preparation of an inter-agency annual ADC workplan. This workplan has been completed for fiscal year 1997 and is available in the Lakeview District file. The EA is tiered to the following programmatic FEIS and ROD: Animal Damage Control Final Environmental Impact Statement (APHIS, 1994).

- Hart Mountain National Antelope Refuge Comprehensive Management Plan FEIS and ROD (USFWS, 1994a, 1994b) - these documents cover the management of Hart Mountain National Antelope Refuge on the northwest boundary of the allotment, including isolated parcels which fall within the Beaty Butte allotment. Management activities generally include removal of livestock grazing from the entire refuge and use of prescribed fire to achieve resource management objectives.

- Sheldon National Wildlife Refuge Renewable Natural Resource Management Plan and Final EIS (USFWS, 1980) - this plan calls for the use of fire, mechanical treatment, chemical treatment, and intensive grazing management to manage vegetation to enhance wildlife values and the use of special management in areas with fragile soils, special wildlife, special status plants, or sensitive habitats. Livestock and wild horse/burro grazing were allowed by the plan. However, in recent years the livestock grazing permits have been purchased and no livestock grazing or intensive grazing management occurs.

All appropriate Federal agencies, including the USFWS, are being provided with an opportunity to review the AMP and provide comments on its consistency with their plans, policies, and directives.

1.3.2 On-Going Federal Plans

In addition to the plans listed above, two other initiatives are currently underway that may eventually, automatically amend certain management direction within this AMP. Though it would first appear more logical to wait until such initiatives are completed prior to making a decision on this AMP, the BLM can not simply stop managing or proposing appropriate changes in management for lands under its jurisdiction until such planning efforts are completed. These efforts are expected to take another 6-24 months to complete. These initiatives include:

- Developing Standards and Guidelines for livestock grazing - The Range Reform '94 Final Environmental Impact Statement and Record of Decision (BLM and Forest Service, 1994) evolved into what is now referred to as the Healthy Rangelands Initiative and amends current grazing administration and management practices. The ROD established national "fallback" standards and guidelines for healthy rangelands, but also required that region-specific standards and guidelines be developed and approved by the Secretary of the Interior no later than August 1997. Should region-specific standards and guidelines not be developed within this timeframe, the fallback standards and guidelines would then apply. In the State of Oregon, several Resource Advisory Councils (RACs) were established to develop the regional standards and guidelines. The RAC established for the part of the state covering the Beaty Butte allotment is the Southeastern Oregon RAC. This RAC has been working on establishing standards and guidelines for about two years. Draft standards and guidelines were made available for public review in March 1997 (BLM, 1997). It is expected that these standards and guidelines will be finalized before the August deadline. Most of the alternatives considered in detail in this AMP/EIS conform to these draft standards and guidelines. All alternatives conform to the national fallback standards and guidelines.

- Interior Columbia Basin Ecosystem Management Project (ICBEMP) and Eastside Draft Environmental Impact Statement - this is a regional ecosystem-based inter-agency planning effort currently in progress for parts of the States of Oregon, Washington, Idaho, Nevada, and Montana. Products from this effort to date include: A Framework for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basins (Haynes *et al.*, 1996a), Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basins (Haynes *et al.* 1996b), Status of the Interior Columbia Basin, Summary of Scientific Findings (FS, 1996), and a multitude of individual scientific documents related to characterization of the study area's social and natural environment.

  In addition, two separate Draft EISs are under preparation. The Draft EIS covering Oregon and Washington east of the Cascade Mountains was recently released (FS and BLM 1997). The most useful outcome of this effort is the assessment of cumulative impacts of Federal timber and range management activities across the entire planning area.

  In most respects, the scientific documents produced to date, as well as those expected in the future, do not represent new information, but rather a compilation, synthesis, and analysis of existing data on a broad, regional scale. Based on this fact, it is hard to determine how the results of this effort may apply specifically to the Beaty Butte allotment and this AMP process. Those documents which contain applicable information have been incorporated by reference and cited, where appropriate, in the text of this AMP. Based on in-house review of the pre-public released Draft EIS, the proposed AMP is expected to conform to the management direction outlined therein.

One of the most pertinent directions within the Draft EIS is the requirement to apply the landscape analysis process (REO, 1995) across some or all of the planning area, based on some logical landscape analysis unit. This unit can be a watershed, sub-watershed, ecological zone, or even an artificial jurisdictional boundary, such as allotment boundary. A landscape analysis is intended to lead to a document that recommends future management activities to correct on-going or past resource problems and is not a decision document. The BLM applied the landscape analysis process within this AMP analysis process. Due to the size of the Beaty Butte allotment and the ease of administration, the allotment boundary was chosen as the appropriate landscape analysis unit.

This AMP has been developed to include the functional elements of a landscape analysis, including a list of recommended projects to meet desired future conditions/objectives. Though the landscape analysis guidance developed to date has focused on western Oregon and Washington forests, most of the principles

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involved are expected to be applied to eastern Oregon in the future. The steps involved include:

a) Delineate the landscape analysis unit.
b) Describe the existing environment.
c) Describe the resource management concerns and opportunities.
d) Define the landscape analysis unit objectives.
e) Develop implementation guidelines.
f) Define the management actions needed to reach the objectives.
g) Define the support needed to reach the future desired conditions.
h) Develop an implementation timeline.

However, unlike a watershed anaysis document, this AMP also integrates all of the requirements of NEPA and is expected to result in a decision document (ROD).

State Plans

The Oregon's Statewide Planning Goals guide land use planning within the state (Department of Land Conservation and Development DLCD, 1995). This requires local governments to develop their own comprehensive plans which implement the state's goals on the local level. One other document which is applicable to the allotment planning area is the Oregon Natural Heritage Plan (Natural Heritage Advisory Council to the State Land Board, 1993) due to the presence of several proposed Research Natural Areas.

The Governor and various State agencies will be given an opportunity to review the proposed AMP and comment on its consistency with their goals, policies, and plans.

1.3.3 Lake County Plan

Lake County has an existing land use plan developed in response to the State of Oregon's requirements. The plan consists of a number of reports, ordinances, and subsequent amendments governing land use practices and policies within the county (Lake County, 1979; 1983; 1989a; 1989b; 1989c; 1992). The county plan classifies the lands within the allotment as "range", which are "suitable for and desirable to be maintained for grazing and other activities related to livestock production..." (Lake County, 1989a).

In 1992, the county passed an Emergency Ordinance and Interim Public Land Management Plan (Lake County, 1992) to supplement the existing land use plan, as amended. This ordinance does not support the designation of any additional wilderness areas or research natural areas within the county. Though the proposed AMP does not address designation of such areas, it does propose interim management for such areas. Designation of such areas will likely be handled at a future date during the land use planning process. The ordinance encourages continuing livestock grazing/agricultural uses at historic levels consistent with sound management practices, as well as continuing the control of predatory animals and noxious weeds.

The Lake County Commissioners will be provided with an opportunity to review the proposed AMP and comment on its consistency with their approved plans and policies.

1.3.5 Harney County Plan

Harney County has an existing land use plan developed in response to the State of Oregon's requirements. The Harney County Commissioners will be provided with an opportunity to review the proposed AMP and comment on its consistency with their approved plans and policies.

1.3.6 Tribal Governments

Five recognized tribal governments are known to have an interest in the Lakeview Resource Area: the Klamath Tribes, Confederated Tribes of the Warm Springs Reservation, Burns Paiute Tribe, Fort McDermitt Tribe and Fort Bidwell Tribe. These tribal governments have been given opportunities to participate in the preparation of this AMP and to identify tribal goals, needs, or plans which may conflict with or support any of the alternatives. To date, no formal comments have been received. These tribes will also be provided with an opportunity to review the proposed AMP and comment on its consistency with any tribal plans or policies.

1.4 Public Comments

In June 1995, the Lakeview Resource Area initiated the public involvement process by sending a scoping letter to potentially interested parties and affected interests discussing the need to prepare an AMP and invited participation in the process. Additional public involvement opportunities were provided which included several working group meetings and an additional 30-day scoping period in December 1996. These opportunities are discussed in greater detail in Chapter 5. The following comments were received and considered by the BLM during the development of the AMP. They are not listed in any particular order of importance or priority. A brief description of how these comments were addressed is contained in parentheses

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General Comments:

1) Very few changes, if any, need to take place (this is addressed in Purpose and Need section, Chapter 1).
2) Do not exchange management jurisdiction between US Fish and Wildlife Service and BLM (this is or will be addressed in separate jurisdictional transfer plan amendment and potential management activities under Alternatives 2 and 4).
3) Delay the final AMP/EIS until the new information is available from the Interior Columbia Basin Ecosystem Management Project (this is addressed in Conformance with Existing Plans and Policies section, Chapter 1).

Riparian Comments:

1) Protect riparian zones directly downstream from and around spring developments (this is considered in goal and objective development).
2) Consult with a hydrologist when considering management of spring developments (this would occur during the ID Team project review process when specific spring projects are proposed.)
3) Address water quality impacts (this is discussed in Chapter 4)
4) Address impacts to non-riparian wetlands associated with livestock use, water development, and fencing (this is discussed in Chapter 4)

Wild Horse Comments:

1) Reduce existing wild horse population (this is outside the project scope, but could be handled in future land use planning process).
2) Consider reducing forage allocated to feral horses to increase forage for wildlife (this is outside the project scope, but could be handled in future land use planning process).
3) Evaluate objectives for horse numbers considering use of allotment by bighorn sheep (this is outside the project scope, but could be handled in future land use planning process).
4) Account for federal (wild) horse use in prescriptions for burning (this is addressed in Chapter 4).
5) Delineate horse populations trends, key seasonal use areas to facilitate interpretation, evaluation and planning (these are considered in goal and objective development, as well as Monitoring Requirements section, Chapter 2).

Grazing Administration Comments:

1) Retire Suspended Nonuse (this is considered as an alternative in Chapter 2).
2) Activate Suspended Nonuse (this is considered as an alternative in Chapter 2).
3) Address whether the land between Hart Mountain and Sheldon Refuges is "chiefly valuable for livestock grazing as required by the Taylor Grazing Act (of 1934, as amended) (Section 1 of this Act requires the Secretary of the Interior to establish grazing districts "which in his opinion are chiefly valuable for grazing...". The Secretary of the Interior made this determination when he established grazing districts).
4) Assess the suitability of these lands for grazing as required under the Multiple Use Sustained Yield Act. (It is not entirely clear to the BLM which law the commenters were referring to as there are several laws that could go by the general title cited. If the commenters were referring to the Multiple Use and Sustained Yield Act of 1960 (Public Law 88-517), the response is straightforward; this law applies only to lands managed by the U.S. Forest Service, not the BLM. If the commenters were referring to Public Law 88-607 (1964), the response is a little more complicated, but this law does apply to the BLM. The purpose of this act was to establish criteria for the Secretary of the Interior to use to determine if **lands should be kept in Federal ownership or disposed** (i.e. sold or exchanged). Lands determined to be "valuable" for grazing were to be retained in Federal ownership, just as were lands that were determined to be valuable for wildlife, mineral production, recreation, and other cited uses. The law did not specify what resource value(s) should be emphasized in future management activities. This law was enacted prior to the Federal Land Policy and Management Act of 1976 (FLPMA). FLPMA established the current multiple use mandate for BLM managed lands).

Wildlife Comments:

1) Adjust forage allocation to Wildlife to reflect needs of more species than just big game (outside the project scope, could be handled in future land use planning process).
2) Monitor bighorn habitat and adjust livestock use to allow for maximum health of the sheep herd (considered in goal and objective development).
3) Delineate and describe objectives for management of key pronghorn habitat (considered in goal and objective development).
4) Delineate and describe objectives for management of key bighorn habitat (considered in goal and objective development).

5) Provide available information on sage grouse populations and habitat in the allotment, delineate key seasonal use areas, describe condition of key areas, maintain and restore sage grouse habitat (considered in goal and objective development).

6) Address special status wildlife species, including pronghorn, sage grouse, and pygmy rabbits (this is addressed in Chapters 3 and 4).

7) Address predators, including consideration of coyotes as a natural part of the ecosystem. Active population control does not represent a solution to predation problems (This issue is outside of the project scope; predator control is the sole responsibility of the Animal and Plant Health Inspection Service (APHIS), not the BLM. The impacts of this activity have been addressed in APHIS (1995), and will not be repeated here).

8) Consider an alternative that involves managing the entire Beaty Butte allotment as a cow-free (wildlife) migration corridor between Hart Mountain and Sheldon Refuges. (This is addressed in Chapters 2, 3, and 4)

Vegetation and Ecology Comments:

1) Address rare plants (this is addressed in Chapters 3 and 4).

2) Address fire ecology, including post-fire management, fire restoration, and rest from grazing (this is addressed in Chapters 2, 3, and 4).

3) Analyze the role of fire across the landscape (this is addressed in Chapter 3). Analyze/describe how prescribed fire would be used, develop criteria or resource objectives to be met by the use of fire, and address impacts of fire on other resources (these are addressed in the development of goals and objectives and Chapter 4).

4) Address conservation biology, including the need for cow-free reserves, buffers, corridors, and special habitats (the consideration of cow-free reserves was addressed in Chapters 2, 3, and 4 under the No Grazing Alternative 5).

5) Address impacts to ecosystem health (this is addressed in Chapter 4).

6) Prescribed burning should be adopted as a tool to achieve desired plant communities. Consider various wildlife needs when planning burns (considered in alternative development and Chapter 4).

7) Select management actions that will assure natural ecological processes will proceed essentially unhindered (considered in goal, objective, and alternative development).

Soil Comments:

1) Address impacts to soils and cryptobiotic crusts (this is discussed in Chapter 4).

Native American Traditional Use Comments:

1) Address impacts to Native American traditional use areas (this is discussed in Chapter 4).

Recreation Comments:

1) Address impacts to recreation (this is discussed in Chapter 4).

Socio-Economic Comments:

1) Address the economic and social (customs, traditions, and cultures) impacts to local communities (this is discussed in Chapter 4).

2) Address the projected costs of fencing and other range improvements (this is discussed in Chapter 4).

Special Management Area Comments:

1) Fencing in Wilderness Study Areas should be considered only as a last resort and in compliance with Interim Management Policy (IMP) (this is considered in alternative development).

2) Avoid actions that would affect eligibility for Wilderness designation (this is considered in alternative development).

3) Provide outstanding opportunities for solitude and primitive recreation at all locations within the WSAs (this is considered in alternative development).

4) Address impacts to proposed Areas of Critical Environmental Concern (ACECs) and Proposed Research Natural Areas (PRNAs) (this is discussed in Chapter 4).

Monitoring Comments:

1) Establish exclosures and monitor effects of grazing using exclosures as a control (considered in Monitoring Requirements section in Chapter 2).

2) Address proposed monitoring protocols, including how they could reasonably be performed with budget/staff constraints to attain the intensity needed to adequately assess management effects (considered in Monitoring Requirements section, Chapter 2).

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Chapter 2
Alternatives Including The Proposed Plan

2.1 Introduction

This chapter provides a detailed description of the alternatives considered. Some alternatives were considered, but were dropped from detailed analysis for the reasons stated in the text. Alternatives 1 through 5 were evaluated in detail. There are a number of items common to some of the alternatives and they are described below. Goals and Objectives (2.1.1), Monitoring (2.1.2), and management of lower Guano Creek (2.1.4) are the same for all five alternatives. Flexibility (2.1.3) and Project Implementation (2.1.5) are common to Alternatives 1 through 4. These common items are described below, preceding the description of alternatives.

2.1.1 Goals and Objectives

The BLM developed a list of goals and objectives based on comments received both from the general public and from the Beaty Butte working group, and MFP decisions that apply specifically to the Beaty Butte allotment.

Goals

1) Provide a diversity of vegetation and plant communities across the landscape in uplands, riparian, and wetland areas.
2) Maintain or enhance habitats for sensitive plant and animal species.
3) Provide adequate ground cover to minimize soil erosion from wind and water.
4) Continue current economic and traditional uses of the allotment at sustainable levels.
5) Maintain or enhance consumptive and nonconsumptive recreational uses.
6) Maintain and respect Native American traditional uses in the allotment.

Objectives

1) Within ten years of making the final decision: 1) at least 80% of the riparian/wetland zones are in Proper Functioning Condition (as defined in BLM Technical References 1737-9 (1993) and 1737-11 (1994c)). All riparian zones (ie, seeps, springs and streams) and wetlands will be included;

   2) no more than a total of 20% of major intermittent and perennial stream banks will have active bank cutting at the end of 10 years following signing of the plan.

Objective 1 addresses goal statements 1, 2, 3, 5, and 6.

If this objective is met, then riparian areas would provide a diversity of vegetation communities and structure for wildlife habitat, to minimize erosion, and provide water for livestock and wild horses. Riparian and wetland areas are important to a variety of uses including fishing and camping, and watering wildlife, livestock and wild horses, and have been raised as an issue in the scoping process.

2) Provide a Potential Natural Vegetation Community (PNC) on at least 25% of the area in the Hawk Mountain #1 and Hawk Mountain #2 proposed RNAs within 10 years of the final decision, and maintain the remaining area in the two Proposed RNAs in a late seral vegetation community.

Objective 2 addresses goal statements 1, 2, and 3.

The PNC would consist mostly of grasses and forbs with about 15-25 percent of the annual vegetative production from shrubs (about 65-75% of the annual vegetative production would be from grasses, 5-35% from forbs, and 15-25% from shrubs). A good understory of grasses and forbs would be maintained in a late seral community, but shrubs may become a more predominant component than in the PNC. At the time of the Ecological Site Inventory in 1988, 94% of the proposed RNA was in late seral stage, and 6% was mid-seral.

If this objective is met, there would be an increase in the grass and forb component and a decrease in the shrub component in the proposed Hawk Mountain #1 and Hawk Mountain #2 Research Natural Areas (RNAs). Some manipulation of the shrub component would be needed to accomplish the objective.

3) Trend toward the Potential Natural Community at the Sink Lakes Proposed RNA. In 1996, a nested plot frequency transect was established in the vernal lake area in the upland low sagebrush area to determine the ecological trend for that plant community. Additional study sties may be established when the water subsides in the vernal lake.

Objective 3 addresses goal statements 1, 2, and 3.

4) Provide a Potential Natural Vegetation Community (PNC) on at least 25% of the area in the proposed RNA within 10 years of the final decision, provide continuation of the functioning condition of lower Guano Creek and protect the two Bureau sensitive plant species that occur there.

Objective 4 addresses goal statements 1,2, and 3.

The PNC would consist of a good understory of grasses and forbs, and shrubs would be in balance within a mid-seral community. At the time of the Ecological Site Inventory in 1988, 90% of the proposed RNA (Wyoming big sagebrush/Thurber's needle and thread grass), was in poor condition (early seral stage). The remaining 10% of the proposed RNA (Wyoming big sagebrush/bluebunch wheatgrass) was in good condition (mid-seral stage). The sensitive plant species occur on outcrops of ashflow and very few other plants occur on these nutrient poor soils. No activity would take place by humans that would change that balance, and the area would be monitored to see that exotic plants do not become established that would constitute a threat. The Bureau Sensitive plants have been monitored and would continue to be monitored to see that their numbers do not decrease, nor would plant habitat be degraded. Guano Creek, within the proposed RNA was found to be in Proper Functioning Condition in the summer of 1996. If this objective is met, there would be an increase in the grass and forb component and a decrease in the shrub component in the proposed Guano Creek Research Natural Area (RNA). Some manipulation of the shrub component may be needed to accomplish the objective.

5) Maintain a big sagebrush canopy cover of less than 20% on more than half of the big sagebrush range site area. The remaining big sagebrush range site area could have greater than 20% canopy cover.

Objective 5 addresses goal statements 1, 2, 3, 4, 5, and 6.

In 1988, about 65% of the big sagebrush site area had a canopy cover of less than 20%.

6) Increase the native perennial grass and forb component and decrease the sagebrush and rabbitbrush component on about 70,000 acres of big sagebrush range sites.

Objective 6 addresses goal statements 1, 2, 3, 4, 5, and 6.

Big sagebrush range sites (including Basin big sagebrush, Wyoming big sagebrush, and mountain big sagebrush) occupy about 355,000 acres of the allotment.

7) Improve the plant community from mid-seral to late seral on 25,000 acres of low sage sites within 10 years of signing the plan. Increase the grass and forb component and decrease the shrub component. Communities on these areas should consist of 30-40% grass, 15-25% forbs, and 35-45% shrubs composition by weight.

Objective 7 addresses goal statements 1, 2, 3, 4, 5, and 6.

8) Maintain early or mid-seral condition on 52,000 acres of the low sage vegetation communities within 10 years of signing the decision. Communities should consist of 20-30% grass, 10-20% forbs, and 40-60% shrubs composition by weight.

Objective 8 addresses goal statements 1, 2, 3, 4, 5, and 6.

9) Maintain late seral or potential natural community on 71,000 acres of low sage communities within 10 years of signing the decision. Plant communities on these areas should consist of at least 30-40% grass, 15-25% forbs, and no more than 35-45% shrubs composition by weight.

Objective 9 addresses goal statements 1, 2, 3, 4, 5, and 6.

Low sage range sites occupy about 148,000 acres of the allotment. In 1988, about 71,000 acres of this range site were in late seral or potential natural community. In 1988, about 76,000 acres of the low sage site area were in early or mid-seral stages.

10) Provide vegetation utilization levels at the Shirk Ranch that would encourage migratory waterfowl use. Utilization level objectives for the Shirk Ranch are:

    1. Residual cover heights 12"+ on 30% of the area
    2. Residual cover heights 6" - 11" on 40% of the area
    3. Residual cover heights 1" - 5" on 30% of the area

2.1.2 Monitoring

Information would be collected using the monitoring techniques described below. The information would be used to evaluate whether or not the objectives described in part 2.1.1 are being achieved. The evaluation would be conducted ten years after the final decision by an interdisciplinary team and would include consultation with all interested parties. If adjustments in management are needed, these would be made in accordance with applicable regulations. The type of information that would be collected is: precipitation data, actual use by livestock, utilization of forage, changes in vegetative composition, vegetative cover, sensitive plant population changes, streambank stability, and Proper Functioning Condition of riparian areas. Wildlife populations would continue to be monitored every year by the Oregon Department of Fish and Wildlife (ODFW). The species monitored are mule deer, pronghorn, and Western sage grouse. Small mammal and California bighorn sheep surveys are conducted periodically by the ODFW. The BLM also would continue to conduct periodic raptor surveys.

Precipitation and temperature data would be collected using the National Oceanic and Atmospheric Administration (NOAA) reports for the Hart Mountain reporting station and the Remote Automated Weather Station (RAWS) data collected at Fish Fin Rim. Precipitation data is available from the Acty Mountain rain gauge from the State Watermaster in Lakeview. This data would be used to determine growing conditions when evaluating whether or not management is meeting objectives.

Actual use by livestock would be collected at the end of each grazing season from the permittees. Number and kind of livestock, dates of use by pasture, and observations made by permittees would be included on the form. After the fact billing privileges are based on promptly returning accurate information to the BLM for use in evaluating grazing management.

Annual utilization measurements and mapping would continue for both cattle and wild horse use. The amount and timing of the horse utilization monitoring would be determined by where the cattle are grazing each year. In the rested areas, the horse use monitoring would be done once a year at the end of the growing season. In the areas being used by cattle, the horse monitoring would be done twice a year (spring and fall). The detailed methods and monitoring schedule can be found in the Wild Horse Utilization Monitoring Plan/Schedule, Beaty Butte Herd Management Area (BLM, 1994d) which is on file in the Lakeview Resource Area Office.

The annual cattle utilization monitoring would be done in the areas the cattle graze that year, and would be done after the cattle leave the area. Utilization would be determined using the Landscape Appearance Method (BLM, 1996a) and a utilization pattern map would be developed to illustrate the amount of cattle use across the pasture.

At the Shirk Ranch, residual cover heights would be measured as described in BLM (1996b) immediately upon livestock removal. After 5 years of monitoring data has been collected, the grazing use would be compared to the desired residual cover levels in objective 10 and adjustments in grazing use at the Shirk Ranch would be made as necessary.

Ecological trend data would continue to be collected at the 26 established study sites. All 26 sites have established photo points; 13 of the sites have established step-toe transects; and 5 of the sites have nested plot frequency transects established. The collection of range ecological trend data would continue using the 26 established photo points and reading the 13 step-toe transects and the 5 nested frequency transects using standard methods (BLM, 1996). The studies would be conducted every three to five years to collect data to evaluate the ecological trend in the allotment. Vegetative inventories in the Proposed RNAs are being initiated for the future RMP. Also, data would be collected in approximately 10 years to compare to the data collected in 1988 Ecological Site Inventory (ESI) to determine the seral stage of the plant communities. Plant community descriptions for the Potential Natural Community for each range site are located in the Lakeview District office. The location of the 1988 sites and description of the methodology is also available at the Lakeview District Office.

A nested plot frequency transect would be established in the vernal lake lakebed site to determine the ecological trend in this plant community. A nested plot frequency transect was established in the upland range site in the Sink Lake PRNA to determine the ecological trend for that plant community. Additional study sites may be established to monitor trend and evaluate if goals and objectives are being met.

To evaluate objective one, the riparian zones would be evaluated using the Proper Functioning Condition methodology (BLM, 1993; 1994b), and the Ochoco Bottom Line Survey Methodology for cut banks. Cut banks in the Ochoco Bottom Line Survey methodology are defined as active erosional surfaces, at least six inches high, that contribute fine sediment to the stream and have slopes greater than 45%. It is not considered a cut bank unless all of these criteria are met. In addition, if the banks have greater than 50% vegetative cover, they are considered stable. The riparian zones would be evaluated approximately every 5 years to detect any change.

To evaluate objective two through nine, the trend studies described above would indicate changes in the vegetation community. As detectable changes in frequency of occurrence of key species occur, several Ecological Site Inventory vegetation transects would be done to determine actual change in the plant community from the 1988 Inventory. In 1996, a nested plot frequency transect was established in the vernal lake area in the upland low sagebrush area to determine the ecological trend for that plant community. Additional study sties may be established when the water subsides in the vernal lake.

The ESI inventory method would be used to determine the effectiveness of the prescribed burns. ESI transects established in the 1988 survey would be repeated about five years on those range sites within the prescribed burn areas that have existing transects. These transects would be done to determine if the composition of the vegetation has achieved the objectives. In the range sites within the prescribed burns that did not have actual ESI transects, transects would be run prior to the prescribed fire to establish a baseline. About five years after the burn, the transect would be run again to determine if the vegetation objectives are being met. Pre-and post fire management would include monitoring of plant communities and cultural plants.

The existing populations of the two plants with BLM sensitive species status are currently monitored every year to determine if there are any changes in the population status. This monitoring would continue. The grimy ivesia studies were initiated in 1990, and the Crosby's buckwheat transects were initiated in 1995. The methodology for the grimy ivesia includes counting and measuring all individual plants. For the Crosby's buckwheat, two transects involving density photo plots and frequency transects have been counted for the last two years. If any known existing population of a BLM sensitive status plant declines by 10 percent or more in any given year, the BLM would determine the cause of the change and consult appropriately on needed changes in management. A Conservation Agreement with the US Fish and Wildlife Service is currently being written for the sensitive plant species. Monitoring methodologies will be evaluated during this effort and may be amended to better reflect changes in plant population dynamics.

Transects would be established and measured during the growing season to determine the diversity and vigor of culturally used plants. Transects would be established in consultation with tribal groups. If practical, these transects would be associated with existing trend study sites.

2.1.3 Management Flexibility

The grazing permit defines the parameters (number and kind of livestock, season of use, and terms and conditions for livestock grazing) within which livestock use may occur, and normally authorizes use for a ten year period. The annual authorization or operating plan describes the use that would occur in a particular grazing season. The flexibility described in this section may be exercised by the permittee without additional authorization from the BLM. Any changes in use beyond the flexibility described herein must first be authorized by the BLM.

Because of the size of the allotment and the varying weather conditions that can occur from year to year, the grazing schedule needs to be flexible and capable of adjustment. The permittees would not turnout prior to the date on the grazing permit, but may go in to the first use pasture up to five days before the specified date on the annual operating plan. This would compensate for changes in the weather and the flexibility necessary to organize the transport of cattle.

A year with extreme variation in weather may also require that changes in the annual operating plan (such as pasture rotation schedule) be made to either insure adequate water for the livestock or to provide additional rest to an area. Wildfire or prescribed burns could also result in a change in the grazing schedule to provide the necessary rest forfine fuel buildup prior to burning or vegetative recovery after burning. Any changes requested would need to be approved by the BLM and would be done in accordance with BLM regulations with reaching the AMP objectives as the goal.

2.1.4 Use of Lower Guano Creek

Livestock use would not be authorized in the lower Guano Creek area *(Maps 2, 3, and 4)* under any alternative because of special status plant management goals and to protect riparian habitat.

2.1.5 Project Implementation Criteria/Mitigation

2.1.5.1 Fences and Exclosures

Fence line delineations shown on the maps would be subject to minor adjustments based on the results of botanical and cultural resource clearances. With the exception of Alternative 1, those fences near Wilderness Study Areas (WSA) would be located to minimize visual impacts to the WSA. Fences would be constructed to BLM spacing standards for cattle in antelope and deer use areas (BLM, 1985a), as modified and analyzed in the Lakeview Grazing Management EIS (BLM, 1982a).

2.1.5.2 Prescribed Burns

The prescribed burn areas delineated on maps 2, 3, and 4, show proposed areas which could be burned to meet the objectives listed above. Actual burns would be designed to result in a mosaic of burned and unburned vegetation within the delineated areas. The proposed prescribed burn sites were selected based on the following criteria: 1) sagebrush currently provides 60% of the annual vegetation production as estimated from transect data from Ecological Site Inventory, 2) the understory of the sagebrush contains sufficient desirable grass species to revegetate the area and meet objectives, 3) the ability to contain the fire is based on access to roads and natural topographic fire breaks, 4) size, shape and location of proposed areas provide reasonable management opportunities to meet objectives. All proposed prescribed burns are subject to change or elimination based on field inspection and future ID Team review to determine site-specific feasibility and suitability. Areas may be excluded from burning because of the presence of rare plants; abundance of nonnative weeds (eg cheatgrass, medusahead); cultural or historical values; specified wildlife values (eg, thermal or hiding cover); and/or complications with protecting private land.

Site specific prescriptions and burn plans will be developed in the future in accordance with the criteria listed above. A typical prescription will include ignition and burning conditions (ranges in temperature, relative humidity, fuel moisture, wind speed and direction), and fire objectives (eg percent of area burned, percent of brush burned). The burn plan will include the logistics for burning and a safety plan.

Generally, prescribed burn areas would be rested from livestock grazing for at least two growing seasons following burning. The ID team would meet with permittees and other interested parties to determine when to authorize livestock grazing. If possible, the meeting would be held at the burn site(s). The main criteria determining when grazing could resume would be if resource objectives are being met. The group may agree on the time to reintroduce livestock grazing on the burns, or the Area Manager may make that determination based on provided recommendations. Burns may be rested by changing the pasture rotation during the recovery period, the individual burn areas may be fenced, or herding may be used to keep livestock off the burns. Wildlife and wild horses may use the burn areas if they are not fenced. Some burn projects may need to be coordinated with wild horse gathers to avoid heavy post-burn horse use.

2.2 Alternatives Considered But Eliminated from Further Study

2.2.1 Reinstate Suspended Nonuse

This alternative was suggested at a working group meeting. Under current regulation, suspended nonuse may be activated if it is determined that additional forage is available on a sustained yield basis. A decision to activate suspended nonuse could be issued only after consultation, cooperation, and coordination with affected permittees and interested parties as defined in Title 43 Code of Federal Regulations (CFR) 4100.0-5. Within the Beaty Butte allotment, approximately 14,466 AUMs of supsended nonuse exists, however, it can not be activated until monitoring shows that additional forage is available on a sustained yield basis while meeting the objectives listed in 2.1.1 above. Therefore, this alternative was dropped from further consideration.

2.2.2 Retire Suspended Nonuse

This alternativewas suggested by one commenter during the initial scoping period and consists of permanently eliminating about 14,466 AUMs of suspended nonuse above the current authorized livestock grazing use of 26,121 AUMs. It was dropped from further consideration as current grazing regulations require the permittee to relinquish the suspended nonuse. In and of itself, this alternative would not alter the impact assessment of any of the alternatives analyzed in detail.

2.2.3 Intensive Development

This alternative was suggested by the ID Team and would involve seeding about 100,000 acres to crested wheatgrass (in addition to the existing Hawk Valley Seeding), providing adequate water on that area for 4,000 head of cattle for a nine-month grazing season, and eliminating livestock grazing from the rest of the allotment. This alternative would not meet the objectives listed above and was dropped from further consideration.

2.2.4 Present Interim Management

This alternative consists of the current flip-flop rotation system and is similar to Alternative 3 without the proposed projects. It was not analyzed further because the impacts are expected to fall within the range of those analyzed in Alternatives 2 and 3.

2.2.5 Twelve-Pasture, Two-Herd Modified Rest Rotation

This alternative would be similar to Alternative 2, but would include an additional fence of about 15 miles to divide the current Common Pasture into four pastures. About five miles of this fence and many of the other proposed projects, including water developments, needed to implement this alternative would be located in Wilderness Study Areas. Because of current constraints on changing the character of WSAs, this alternative could not be implemented and was not further analyzed.

2.3 Alternatives Considered in Detail

An AMP is an activity level plan tiered to a broader land use plan. This AMP process has led to the development of four detailed alternatives (1-4) which could be implemented with varying degrees of success under the general guidance of the existing land use plan. With the exception of Alternative 5 (No Grazing), all alternatives considered in detail involve implementing a rest-rotation grazing system whereby 26,121 AUMs would be allocated to livestock grazing, 2,400 AUMs would be allocated to wild horses, and 444 AUMs would be allocated to wildlife. This AMP will not amend existing land use level planning decisions (such as forage allocation, special management area designations, and wild horse herd management area boundaries).

2.3.1 Alternative 1 - No Action (Full Implementation of the MFP)

This alternative would consist of full implementation of the Warner Lakes Management Framework Plan as described in the Rangeland Program Summary, Record of Decision, Lakeview Grazing Management FEIS (BLM, 1982a; 1982b). The Record of Decision includes implementing a rest-rotation grazing system, including the list of range improvements shown in Table 1. This alternative is included as a baseline as required by the National Environmental Policy Act of 1969 (NEPA). It includes project proposals in WSAs which can not be legally implemented under the current Wilderness Interim Management Policy (BLM, 1995b). Under current USFWS management, there is currently no authorized livestock use on the Shirk Ranch, but other small, isolated parcels of USFWS-administered lands located south of the Hart Mountain National Antelope Refuge boundary are not currently fenced and would continue to be grazed along with BLM-administered lands or would have to be fenced by the USFWS to exclude grazing.

2.3.2 Alternative 2 - Eleven Pasture System

This alternative involves completing some of the projects listed in the MFP with additional projects (Tables 2 and 3; Appendices A and B) to implement a two-herd rest-rotation system. One herd would use a three-pasture rest-rotation grazing system in the east side area, with trail and drifting use in the Spaulding pasture, end of season use in Guano Lake pasture, or alternate year use in Hawk Valley pasture. The other herd would use a five-pasture system on the west side of the allotment (Map 3).

The implementation of this system and the projects would take several years because of the cost and scope of the projects. Two new fences would be built to create the three pasture system in the east side. Two new pastures would be created in the southern part of the east side by building a fence from Highway 140 at the Oregon/Nevada state line north to South Corral Spring, then on to a proposed fence through Buckaroo Pass (Map 3, project b). Another fence

Table 1. Alternative 1 - Projects Listed in the Management Framework Plan/Lakeview Grazing Management ROD (East and West Sides)[1].

	Fence miles	Spring numbers	Pipeline miles	Reservoir numbers	Water hole numbers	Burn and Seed Acres	Brush Control Acres
Proposed	72.3	2	205	52	14	36,840	500
Completed	19.8	1	0	17	4	0	600

[1] Map 2 shows the location of the projects proposed in the MFP.

Table 2. Eastside Pastures Project Summary - Alternative 2[1].

Fence miles	Spring numbers	Pipeline miles	New Reservoir numbers	Rebuilt Reservoir numbers	Burning Acres	Burn and Seed Acres
30	0	5	2	3	79,900	6,500

[1] Map 3 shows the location of the projects proposed.

Table 3. Westside Pastures Project Summary - Alternatives 2 through 4[1].

Fence miles	Spring numbers	Pipeline miles
8	1	2

[1] Map 3 shows the location of the projects proposed.

would be built through Buckaroo Pass from the northeast corner of the Spaulding Pasture to an unnamed butte north of Shallow Lake (Map 3, project a). This fence would be about 11 miles long and would divide the north from the south. Fence locations shown on the maps are general locations. Actual siting would be within 0.5 mile of the shown location. These fences would create the North, Southeast and Southwest pastures. The Hawk Valley Seeding Pasture already exists. The rotation system would follow the schedule shown in Table 4. Under this grazing schedule, the cattle would always end the summer being herded to the west through the Spaulding pasture and into the Guano Lake pasture during the month of September before leaving the allotment in October. The schedule allows for the cattle to spend four days trailing through the Spaulding pasture. Many of the cattle would be herded straight through to Guano Lake pasture and others would be dropped off and allowed to drift into Guano Lake pasture.

The second herd would use five pastures on the west side of the allotment. The existing Clove pasture would be incorporated into the Beaty Butte grazing plan. A fence would be constructed south of Guano Creek, dividing the current Jack Lake pasture into two pastures. The northern half of the new pasture would be used as a riparian pasture. Jack Creek pasture would be divided into two pastures with an east-west fence in the middle of the existing pasture. The result would be a five-pasture rest-rotation system using one herd. The grazing schedule is outlined in Table 5.

There were parameters used in developing this schedule. The first parameter is that every pasture on the west side would be completely rested one entire year during the five-year grazing cycle. The schedule is also designed to make rotation of the cattle as simple as possible in order to increase the success of the rotation. A second parameter is that Jack Lake Riparian pasture would be grazed early in the spring so that regrowth could occur and Guano Creek would have plenty of vegetative cover for the next spring runoff. One year out of five, the Jack Lake Riparian pasture would be grazed at the end of the season. By then the creek would be dry and cattle use in the creek would be light. An average end of season stubble height of six inches at key sites along the creek is expected. A third parameter is that Clove pasture would not be grazed at the end of the season because the water sources in this pasture typically dry up by then.

2.3.3 Alternative 3 - Current Management with Range Improvements

This alternative would consist of a two-pasture system in the east side area with the north half being grazed one year while the south half was rested. The grazing would be reversed in the second year. Daily herding would substitute for fencing. The herding would insure that different portions of the pasture were used throughout the season and would allow deferment of grazing use for some areas, and would allow others to regrow after being grazed. The grazing schedule is shown in Table 6.

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Table 4. Eastside Pastures Grazing Schedule - Alternative 2

	YEAR			
PASTURE	1	2	3	4
North	April 1 - August 31, rotate around Beaty Butte in a counter-clockwise direction; 3,500 cows (16,000-19,000 AUMS)[1].	REST	April 1 - August 31, rotate around Beaty Butte in a counter-clockwise direction; 3,500 cows (16,000-19,000 AUMS)[1].	REST
Southwest	REST	April 1 - June 15; 3,000 cows (7,000-8,000 AUMS)[2]	REST	June 15-August 15; 3,500 cows (6,000-8,000 AUMS)[3]
Southeast	REST	June 15 - August 15, 3,500 cows (6,000-8,000 AUMS)[3]	REST	April 1-June 15; 3,000 cows (7,000-8,000 AUMS)[2]
Hawk Valley Seeding	REST	April 1-May 31; 500 cows (1,000 AUMS).	REST	April 1-May 31; 500 cows (1,000 AUMS).
Spaulding	April 1-30, trail use; 3,500 cows for 2 days (250 AUMS). August 1-October 1, drifting use averaging 4 days (500 AUMS)	April 1-30, trail use; 3,500 cows averaging 4 days (500 AUMS). August 1-October 1, drifting use for 2 days (250 AUMS).	April 1-30, trail use, 3,500 cows for 2 days (250 AUMS). August 1-October 1, drifting use averaging 4 days (500 AUMS)	April 1-30, trail use, 3,500 cows for 2 days (250 AUMS). August 1-October 1, drifting use averaging 4 days (500 AUMS)
Guano Lake	August 1-October 30, (no more than 30 days); 3,500 cows (3,000 AUMS)	August 1-October 30 (no more than 30 days; 3,500 cows (3,000 AUMS)	August 1-October 30, (no more than 30 days), 3,500 cows (3,000 AUMS).	August 1-October 30 (no more than 30 days; 3,500 cows (3,000 AUMS).

[1] There is a range of AUMS to cover the variablity in precipition, which is what determines if the cattle come off in early August or late August.

[2] The range in AUMS is to cover the variation in turnout time which is dependent on the weather.

[3] The range in AUMS is cover variation in the rotation time which will be effected by the weather, the condition of the vegetation and the amount of water available in each pasture.

Table 5. West Side Pastures Grazing Schedule - Alternatives 2 and 3

Pasture	Year 1	 2	 3	 4	 5
Jack Lake Riparian	April 1 to May 15 (750 AUMS)	August 15 to October 1* (750 AUMS)	REST	April 1 to May 15 (750 AUMS)	April 1 to May 15 (750 AUMS)
Jack Lake South	August 1 to September 15 (750 AUMS)	July 1 to August 15 (750 AUMS)	May 1 to June 15 (750 AUMS)	May 15 to July 1 (750 AUMS)	REST
Corral Lake	June 15 to August 1 (750 AUMS)	May 15 to July 1 (750 AUMS)	June 15 to August 1 (750 AUMS)	REST	August 1 to September 15 (750 AUMS)
Jack Creek South	REST	April 1 to May 15 (750 AUMS)	August 1 to September 15 (750 AUMS)	August 1 to September 15 (750 AUMS)	June 15 to August 1 (750 AUMS)
Clove	May 15 to June 15 (500 AUMS)	REST	April 1 to May 1 (500 AUMS)	July 1 to August 1 (500 AUMS)	May 15 to June 15 (500 AUMS)

* Cattle will be removed from the Jack Lake Riparian pasture when riparian vegetation stubble height reaches 6 at key sites on Guano Creek, or October 1, whichever occurs first.

The projects would be the same as listed under Alternative 2 except the fences would be replaced by the fence projects shown on Map 4 (projects a, A, B, C) and listed in Tables 3 and 7, and Appendices A and C. About 12 miles of fence would be built from the east side of the Spaulding Pasture Fence to the east through Buckaroo Pass toward Shallow Lake. At the east end, the fence would be tied into a natural barrier to reduce the possibility of cattle walking around the end of the fence. The west side pastures would have the same grazing schedule as described in Alternative 2, Table 5.

2.3.4 Alternative 4 - Jurisdictional Transfer (Preferred Alternative)

In most respects, this alternative would be very similar to Alternative 2, except the USFWS would acquire administrative jurisdiction of a portion of the Jack Lake Riparian pasture (about 7,870 acres) and manage that area in accordance with their existing land use plan (i.e. no grazing) (USFWS, 1994a; 1994b). The BLM would retain administrative jurisdiction of the rest of the pasture. That portion of the pasture north of the new fence, including Guano Creek pasture (approximately 17,070 acres, project A, Map 3) would also be excluded from livestock grazing (Table 9). The BLM would acquire administrative jurisdiction of the Shirk Ranch and scattered portions of land currently administered by the USFWS within the Beaty Butte allotment (about 2,340 acres). The scattered parcels of USFWS land transferred to BLM would be grazed in conjunction with the BLM lands, as shown in Table 8. (The specific details of this jurisdictional transfer are currently being worked out in a separate, but related joint-agency plan amendment/NEPA process. This alternative covers how the lands would be managed, should the transfer be completed).

Table 6. Eastside Pastures Grazing Schedule - Alternative 3

PASTURE	YEAR 1	2	3	4
North	April 1 - August 31, rotate around Beaty Butte in a counter-clockwise direction; 3,500 cows (16,000-19,000 AUMS)[1]	REST	April 1 - August 31, rotate around Beaty Butte in a counter-clockwise direction; 3,500 cows (16,000-19,000 AUMS)[1]	REST
Southwest	REST	April 1 - May 31, 3,000 cows (6,000 AUMS) June 1 - August 31, 3,500 cows (8,500-10,500 AUMS)[1] Start at Sagehen Camp and rotate east to Hawk Valley and then west to Guano Valley	REST	April 1 - May 31, 3,000 cows (6,000 AUMS) June 1 - August 31; 3,500 cows (8,500-10,500 AUMS)[1] Start on west side and move east to Hawk Valley and then west to Guano Valley
Hawk Valley Seeding	REST	April 1 - May 31, 500 head (1,000 AUMS)	REST	April 1 - May 31, 500 head (1,000 AUMS)
Spaulding	April 1-30, trail use; 3,500 cows for 2 days (250 AUMS) August 1-October 1, drifting use averaging 4 days (500 AUMS)	April 1-30, trail use, 3,500 cows for 2 days (250 AUMS) August 1-October 1, drifting use averaging 4 days (500 AUMS)	April 1-30, trail use, 3,500 cows for 2 days (250 AUMS) August 1-October 1, drifting use averaging 4 days (500 AUMS)	April 1-30, trail use, 3,500 cows for 2 days (250 AUMS) August 1-October 1, drifting use averaging 4 days (500 AUMS)
Guano Lake	August 1-October 30, (30 days); 3,500 cows (3,000 AUMS)	August 1-October 30 (30 days); 3,500 cows (3,000 AUMS)	August 1-October 30, (30 days); 3,500 cows (3,000 AUMS)	August 1-October 30 (30 days); 3,500 cows (3,000 AUMS)

[1] There is a range of AUMS to cover the variablity in precipition, which is what determines if the cattle come off in early August or late August.

Table 7. Eastside Pastures Project Summary - Alternative 3[1].

Fence miles	Spring numbers	Pipeline miles	New Reservoir numbers	Rebuilt Reservoir numbers	Burning Acres	Burn and Seed Acres
12	0	5	1	3	79,900	6,500

[1] Map 4 shows the location of the projects proposed

Table 8. Eastside Pastures Grazing Schedule - Alternative 4

	YEAR			
PASTURE	1	2	3	4
North[1]	April 1 - August 31, rotate around Beaty Butte in a counter-clockwise direction; 3,500 cows (16,000-19,000 AUMS)[1].	REST	April 1 - August 31, rotate around Beaty Butte in a counter-clockwise direction; 3,500 cows (16,000-19,000 AUMS)[1].	REST
Southwest	REST	April 1 - June 15, 3,000 cows (7,000-8,000 AUMS)[2].	REST	June 15-August 15, 3,500 cows (4,500-6,500 AUMS)[3].
Southeast	REST	June 15 - August 31; 3,500 cows (4,500-6,500 AUMS)[3].	REST	April 1-June 15, 3,000 cows (7,000-8,000 AUMS)[2].
Hawk Valley Seeding	REST	April 1-May 30; 500 cows (1,000 AUMS).	REST	April 1-May 30; 500 cows (1,000 AUMS).
Spaulding	April 1-30, trail use; 3,500 cows for 2 days (250 AUMS). August 1-October 1, drifting use averaging 4 days (500 AUMS).	April 1-30, trail use; 3,500 cows for 2 days (250 AUMS). August 1-October 1, drifting use averaging 4 days (500 AUMS).	April 1-30, trail use; 3,500 cows for 2 days (250 AUMS). August 1-October 1, drifting use averaging 4 days (500 AUMS).	April 1-30, trail use; 3,500 cows for 2 days (250 AUMS). August 1-October 1, drifting use averaging 4 days (500 AUMS).
Shirk Ranch	August 1-September 30; (1,000 AUMS)[4].	August 1-September 30; (1,000 AUMS)[4].	August 1-September 30; (1,000 AUMS)[4].	August 1-September 30; (1,000 AUMS)[4].
Guano Lake	August 1-October 30 (no more than 30 days; 3,500 cows (3,000 AUMS).	August 1-October 30 (no more than 30 days; 3,500 cows (3,000 AUMS).	August 1-October 30 (no more than 30 days; 3,500 cows (3,000 AUMS).	August 1-October 30 (no more than 30 days; 3,500 cows (3,000 AUMS).

[1] There is a range of AUMS to cover the variablity in precipition, which is what determines if the cattle come off in early August or late August.

[2] The range in AUMS is to cover the variation in turnout time which is dependent on the weather.

[3] The range in AUMS is cover variation in the rotation time which will be effected by the weather, the condition of the vegetation and the amount of water available in each pasture.

[4] The grazing period shown represents a range of time in which the cattle may be in the pature. The actual utilization levels or AUM level would determine the actual length of grazing time in any given year.

Table 9. West Pasture Grazing Schedule - Alternative 4 (500 cows).

PASTURE	YEAR 1	2	3	4
Jack Lake South	May 1-June 20 (800 AUMS)	July 1-August 10 (650 AUMS)	REST	April 1-May 20 (800 AUMS)
Corral Lake	June 20-August 10 (800 AUMS)	May 15-July 1 (750 AUMS)	May 1-June 20 (800 AUMS)	REST
Jack Creek South	REST	April 1-May 15 (750 AUMS)	June 20-August 10 (800 AUMS)	June 20-August 10 (800 AUMS)
Clove	April 1-30 (500 AUMS)	REST	April 1-30 (500 AUMS)	May 20-June 20 (500 AUMS)
Shirk Ranch	August 10 - September 30 (500 AUMS)			
Guano Lake	September 10 - October 30 (500 AUMS)			

The grazing period shown represents a range of time in which the cattle may be in the pasture. The actual utilization levels or AUM level would determine the actual length of grazing time in any given year.

The Shirk Ranch would be irrigated in the spring and grazed between August 1 and October 1 each year, to create a diversity of habitat structure suitable for waterfowl use. Up to 1,500 AUM's of forage may be grazed by livestock which would also serve to offset forage no longer available from Jack Lake Riparian and Guano Creek pastures. Additional fencing (about one mile, project D, Map 3) may be built to allow rotational grazing if monitoring shows the fence is necessary to meet objective 10. Any additional grazing use would be granted only if it benefits migratory bird habitat values (i.e. is needed to reach the desired average residual cover objective 10). Water for irrigation of the ranch would be provided from Jacob's Reservoir.

2.3.5 Alternative 5 - No Grazing

This alternative would remove livestock grazing from the public lands in the allotment. Grazing could continue on the private land. Wild horses would continue to be managed in accordance with the Beaty Butte HMA Plan (BLM, 1977). The projects under this alternative include the prescribed burns as outlined in Appendix A and shown on Map 3. Existing internal pasture boundary fences (see Map 1) would be removed. Existing spring developments and exclosures on public land (see Map 1) would be maintained to exclude wild horse use from the riparian zone surrounding the water source while allowing use of water outside the exclosure. Though this alternative can not be legally implemented without amending the existing land use plan, it is considered in detail in order to address the comments/concerns raised during the scoping process.

Chapter 3
Affected Environment

3.1 Introduction

This section describes resources in the Beaty Butte allotment. Only those resources likely to be affected by implementation of one or more of the alternatives analyzed are evaluated. The following resources are not present or are not a significant concern in the planning area: prime or unique Farm Lands, floodplains, hazardous or solid wastes. Though, no wild and scenic river designations currently exist within the allotment, an interdisciplinary team is presently (Fiscal Year 1997) evaluating all streams in the Lakeview Resource Area, including those flowing within the Beaty Butte allotment, for designation potential. The results of this inventory will be included in the Final EIS, if available.

The Beaty Butte allotment lies entirely within the Basin and Range geomorphic province (Franklin and Dyrness, 1973), which is characterized by large faults tending in a northerly direction. These faults have produced numerous fault-block mountain ranges and basins of internal drainage. Elevations in the allotment range from 5186 feet at Guano Lake to 7885 feet on Beaty Butte.

The area has a semi-arid climate with long, cool, moist winters and short, warm, dry summers. Most of the precipitation occurs from November through February, with some spring rains in May and June. The nearest NOAA reporting station is at Hart Mountain NAR at an elevation of 5,616 feet. A RAWS station is located near Fish Fin Rim, and weather data is collected by the BLM. Annual precipitation averages 11.08 inches, and the mean annual temperature is 43.6 degrees Fahrenheit (F). Precipitation ranges from an average 1.43 inches in May to 0.43 inches in July. Annual precipitation can range from about 8 inches to over 20 inches. Average monthly temperatures range from 28.7 degrees F. in January to 62.5 degrees F. in July. Freezing temperatures (below 32 degrees F.) can occur on any day of the year. Temperatures can range from below 0 degrees F. in the winter to over 90 degrees F in the summer. Climatic data from elsewhere in the Northern Great Basin and Southeastern Oregon indicates that seven out of ten years (in the past) have been drought affected (Wayne Elmore, personal communication, 1995).

There are two major private land owners in the allotment. One owns private land in the Northeast corner of the allotment adjacent to the Hart Mountain NAR, and scattered parcels mostly associated with springs and water sources. The other major landowner has most of the checkerboard pattern in the Northeast corner of the allotment. This owner does not have authorized grazing use in the Beaty Butte allotment, but has discussed several options for use of the land with the BLM. These include exchanging grazing use in the allotment, exchanging land to block ownership, and acquiring preference and a permit and forming a separate allotment. None of these options are analyzed in this document because they are purely speculative at this time. There are scattered parcels of 20 to 160 acres owned by various individuals.

The US Fish and Wildlife Service (USFWS) manages land within the allotment. The largest block, the Shirk Ranch, is fenced separately from the allotment, the other parcels are not. All the parcels are included in the proposed jurisdictional transfer analyzed in Alternative 4. The decision to transfer these lands to the BLM is currently being considered in a separate, but related joint agency planning effort.

3.2 Hydrology and Water Quality

A watershed has three primary functions: capturing water, storing it in the soil, and releasing it. The factors influencing watershed function include: vegetation; surface geology; the texture, structure, depth and rock content of soils; the frequency, intensity, kind and duration of precipitation, frosts and thaws; runoff (amount and intensity of peak flows); topography; land use; upland erosion; and stream channel erosion (Anderson, 1993). Vegetation and surface soil structure are the factors most influenced by land management, which in turn, affect watershed function.

Capture is the process of getting water from the atmosphere into the soil. Plant cover on the soil surface can trap rain which helps precipitation seep into the soil rather than running off the site. Plant cover reduces raindrop impact upon the soil surface and

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minimizes soil crusting (creation of an impervious soil surface) and erosion. Plant litter, organic matter and cryptobiotic crust absorb rain and melting snow and help keep soil moist. Plant cover can trap snow at or very near the soil surface and reduces soil freezing by acting as insulation. Moisture leaves the soil in three ways: through evapotranspiration, percolation into the groundwater aquifer, and through direct evaporation from bare soil surfaces. The kinds and amount of vegetation and the plant community structure can greatly affect the storage of water on any particular site.

Groundwater quality is discussed briefly on page 2-25 and 2-26 of the Lakeview Grazing Management Environmental Impact Statement (BLM, 1982a). At Guano Lake, groundwater is at about 552 feet below surface. Water emerging at the various springs is cold and clear. No water quality tests for dissolved solids have been done. Water moves through the soil to ground-water aquifers, or to surface flow via seeps, springs or streams. The amount and rate of water released depends on how much water is already in the soils of the uplands, riparian areas and streambanks. If soils are filled with moisture to their maximum field capacity, then the excess from rain or melting snow will be released downstream. In the Beaty Butte area, only enough water is available for the springs to flow a short distance from their source before it soaks back into the ground water system. Also, the rate of precipitation that falls affects the amount and rate of water release. This also affects duration and volume of spring flow and even whether a spring will flow on any given water year. The length of time for water to move from the uplands to the springs varies. In past years, increased spring flow has been noted a year after greater than normal precipitation. Soils can take in water up to a certain rate that is generally dependent on the soil type and plant and litter cover. If rain or melting snow is applied at a rate that is faster than the soil can absorb, then the excess water is not absorbed but runs overland off the site.

Runoff is captured in natural ponds and constructed waterholes and reservoirs where it is consumed by animals or evaporates. There are currently 135 constructed waterholes and reservoirs in the allotment, many of which are not functional, in addtion to the natural seep[illegible]ings described above.

Appendix E, Table 1, shows the breakdown of watershed and basins with the Beaty Butte allotment. These delineations represent fifth field watersheds that were developed by the Regional Ecosystem Office based on subdividing the U.S. Geological Survey fourth field hydrolgic units. The 21 watersheds in the allotment vary in size from 72,374 acres to 4,388 acres and average 24,428 acres. Some of the entire watersheds fall entirely within the allotment boundaries while only a small portion of others are included in the allotment. Of the two regions, the Great Basin covers only 1.8% of the allotment in the extreme south east corner of the allotment. The remainder of the allotment is in the Pacific NW region.

Within the Guano Nevada Sub-basin there are 19 watersheds. Within any one of these watersheds, some portions may be internally drained into small intermittent lakes. There are four major groups in these watersheds. One individual watershed internally drains the Hawksie-Walksie Area and covers 5.7% of the allotment. A second group of 6 watersheds drains south directly into the Catlow Valley. This group of watersheds covers 33.4% of the allotment and is south and east of Beatys Butte and north of Acty and Hawk Mountains.

A third group of watersheds flows into Guano Creek north of the Shirk Ranch and includes the main Guano Creek watershed on Hart Mountain. This group of seven watersheds covers 25.9% of the allotment. After flowing north, then east, water from this group of watersheds eventually flows into Catlow Valley. Natural flow patterns of Guano Creek have been altered to control irrigation water on the Shirk Ranch. Water from Guano Creek would have been split, with some flowing north to Catlow Valley and some flowing south into Guano Lake. A dam now prevents most of this water from flowing south. A. K. Majors (ODSL, personal communication) remembers seeing water flowing south from the Shirk Ranch in past high runoff years. This would explain how Sheldon tui chub would be able to repopulate Shirk Lake after it would go dry during droughts.

The fourth and final group of five watersheds flows into the internally drained Guano Lake. They cover 33.2% of the allotment. Sagehen Creek is a major drainage in this watershed. Once water in Guano Lake reaches 14 feet deep (to the 5200 foot elevation level) it flows north into Guano Slough and eventually into Catlow Valley.

For water quality planning purposes, the Beaty Butte allotment lies within the Malheur Lakes Basin. The Oregon State Department of Environmental Quality (DEQ) lists the beneficial uses in this basin and the water quality parameters that affect these uses. Appendix E, Table 2, indicates the beneficial uses and the parameters that apply. Even if the described beneficial use does not occur, the parameter still applies, unless the State determines that the use cannot be attained.

Section 303(d) of the 1972 Federal Clean Water Act requires each state to identify the waters for which existing required pollution controls are not stringent enough to achieve that state's water quality standards

The recent clarification of the intent of Section 303(d) requires the State to demonstrate good cause for not listing a water body and puts the burden of proof on the State to justify exclusion of any water body (DEQ, 1996). None of the waters in the Beaty Butte allotment have been listed on the State 303(d) list. No measurements of the quality of these waters has been made by the state or the BLM.

3.3 Soils

Soils were inventoried and described between 1986 and 1988 by an Ecological Site Inventory crew in accordance with the Natural Resources Conservation Service (NRCS) National Soils Handbook. There were 98 mapping units identified within the Beaty Butte allotment with 28 units being individual soil series and the other 70 units being complexes or associations. A complete list of the soil mapping units and maps are available at the Lakeview District BLM office. To address impacts to the soil resource the mapping units have been combined into twelve general groups. These are listed in Appendix F, Table 1. Appendix F also contains a description of these soil groups.

3.4 Air Quality

The most commonly experienced weather patterns in Southeastern Oregon are stable continental air masses and frontal weather conditions. Transport wind (free air) direction during stable continental air mass conditions is southwesterly. Transport wind (free air) direction during frontal passage is generally northwesterly. These two climatic conditions comprise the greatest percentage of upper air movement days. However, changes are abrupt and transitioning conditions can be from any direction (USFWS, 1994a). The Beaty Butte allotment is in the Class II (nonpristine) air quality category and there are no sensitive areas in close proximity to the allotment. There are no known existing air pollutant emissions in the surrounding vicinity that would impact the background air quality of the Beaty Butte allotment. Some alkali dust blows in the summer when water evaporates from the shallow lakes, drying the lakebeds.

3.5 Vegetation

The concepts of island biogeography apply to the Beaty Butte allotment, which lies within the Basin and Range Province. The isolated mountains act as "islands" for biota and the surrounding valleys and playas contain few of the mountain "island" species.

At present there is little or no conductivity or movement of species between one mountain range and the next. In analyzing data from elsewhere in the Northern Great Basin and Southeastern Oregon, climatic studies indicate that seven out of ten years (in the past) have been drought related (Wayne Elmore, personal communication, 1993). This island biogeography coupled with the unpredictable precipitation has created plant species and plant communities that are not stable, rather they are resilient. This means that from year to year plant numbers may very greatly. However, the plant communities remain intact, but it is difficult to predict plant numbers and diversity from year to year (Yellen 1977).

The description of the vegetation is divided into four categories: aquatic/riparian/wetland, terrestrial, cryptobiotic crusts, and noxious weeds.

3.5.1 Aquatic, Riparian and Wetlands

There are five types of wetland vegetation sites defined for the purpose of analyzing alternatives. They are spring sites, riparian communities, marsh/meadow sites, lakes, and dry playas with little or no vegetation.

All spring sites are treated the same. Riparian zones are divided into aspen communities, deciduous shrubs communities, wet meadows, and dry meadows. Marsh/meadow lands are divided into wet meadows, dry meadows, saline meadows, and sodic flats. Lake definitions depend on water availability and are divided into intermittent lakes and lakebeds. Silver sage playas are analyzed under Section 3.5.2 Terrestrial Vegetation.

The two extremes of wetland plant communities are wet spring sites vegetated by shrubs, sedges, rushes and grasses, and at the other end of the water spectrum are found ponded clay flats with little or no vegetation. Spring sites and riparian areas were heavily impacted by excessive cattle grazing at the end of the last century and by overgrazing by sheep in the first part of this century. Where riparian areas are functioning, sedges and rushes grow along the stream banks, where channels have been down cut, grasses and shrubs cover the stream banks. In many of the riparian communities, there is little or no streamside vegetation. Shading is very marginal or non-existent, and in several locations stream channels are deeply cut with no streamside vegetation.

The water supply in riparian areas is influenced mostly by the degree to which stream channels have been eroded. Eroded stream channels cause water tables to decline, so that along streams where the water table has been lowered, rabbitbrush or sagebrush meadows become established at the expenses of the grasses/sedges; sedge cover establishes when the water table is near to ground level (USFWS, 1994a).

The Ecological Site Inventory (ESI) method has been used to describe wetland vegetation. The wetland vegetation communities present in the allotment were divided into seven primary groupings by the ESI based on soil factors and estimations of site potential. These groupings are listed below. These community groupings are highly dynamic in response to weather patterns and other disturbance factors. In the low to mid-seral stages, some of these community groupings may be indistinguishable. There are approximately 8,270 acres of wetlands in the allotment.

Wet Meadow

Common Name	% Composition
tufted hairgrass	50-65
Nebraska sedge	5-8
Baltic rush	3-5
northern mannagrass	3-5
reedgrass	3-5
whitetip clover	1-2
western aster	1-2
buttercup	1-2
cinquefoil	1-2

Other grasses and grass-like plants (2-20% in aggregate) oatgrass, sloughgrass, meadow barley, sedges, Nevada bluegrass, creeping wildrye, prairie junegrass, slender wheatgrass. Other forbs (1-8% in aggregate) iris, monkeyflower, yarrow, rose pussytoes, senecio, strawberry

Dry Meadow

Common Name	% Composition
slender wheatgrass	35-50
Leiberg bluegrass	35-50
mat muhly	2-5
prairie junegrass	2-5
sedge	1-2
cinquefoil	1-2
yarrow	1-2
penstemon	1-2
larkspur	1-2

Other forbs (2-3% in aggregate) gentian, longstem clover, waterleaf

Saline Meadow

Common Name	% Composition
Nuttall alkaligrass	50-70
inland saltgrass	20-30
other forbs	3-5
black greasewood	2-3
gray rabbitbrush	2-3
green rabbitbrush	2-3
squirreltail	1-5
aster	1-2
sedges	1-2

Sodic Flat

Common Name	% Composition
inland saltgrass	20-40
black greasewood	40-60
basin wildrye	5-15
iodinebush	2-5

Other grasses and grass-like plants (1-4% in aggregate) alkali sacaton, Lemmon alkaligrass, alkali muhly. Forbs (1-6% in aggregate) poverty weed, thelypodium, pickleweed, seepweed

Intermittent Lake

Common Name	% Composition
creeping wildrye	25-55
silver sagebrush	10-15
Nevada bluegrass	10-20
lupine	1-2
mat muhly	5-10
lomatium	1-2
sedge	1-5
evening primrose	1-2

Other perennial grasses and grass-like plants (2-5% in aggregate) rushes, meadow barley, bottlebrush squirreltail

Lakebed

Common Name	% Composition
spike-rush	30-50
dock	25-35
Baltic rush	10-20
poverty weed	5-10
mat muhly	5-10
squirreltail	5-10

Other grasses and grass-like plants (2-5% in aggregate) sedge, saltgrass, creeping wildrye. Other forbs (1-5% in aggregate) Anderson clover, arnica, evening primrose, knotweed, Smelowskia, lupine

Ponded Clay

Common Name	% Composition
Nevada bluegrass	40-50
creeping wildrye	15-20
silver sagebrush	5-15
mat muhly	5-10
dryland sedge	1-5
lomatium	1-2
evening primrose	1-2
lupine	1-2

Other grasses and grass-like plants (5-10% in aggregate): bottlebrush squirreltail, meadow barley, basin wildrye, dryland rush.

In addition to the fairly extensive communities described above, several emergent aquatic vegetal communities can be found where water has been ponded for at least three years. These almost always occur as pure-stand communities because of their differing water depth and period of total soil saturation requirements. Variations in bottom contour, however, often give the impression of extensive ecotonal intermixing. These communities are: hardstem bulrush, broadleaf cattail, narrowleaf cattail, alkali bulrush, common burreed, and arnica. No truly aquatic vegetal community had been documented, but undoubtedly each lake or pond contains a slightly different assemblage of phytoplankton.

3.5.2 Terrestrial Vegetation

The Oregon Natural Heritage Program (Kagan and Caicco, 1996) has recently developed a vegetation cover map for the state of Oregon, based on LANDSAT thematic mapper (TM) data from 1988. Based on this data/methodogy, vegetation communities within the allotment can be divided into three general biomes and several cover types (Appendix E, Table 3).

The terrestrial biomes present are desertshrub, sagebrush/grassland, and montane shrub. Cover types present are black greasewood shrub, shadscale scrub, silver sagebrush scrub, big sagebrush shrub (with different bunch grasses), low sagebrush (with different bunch grasses), big sagebrush/bitterbrush shrub, bitterbrush shrub, mountain snowberry shrub, mountain mahogany shrubland, quaking aspen-snowberry shrubland, isolated juniper woodland, mountain big sagebrush and cultural landscape, such as crested wheat grass and other planted perennial seedings.

Approximately 6,880 acres in the Hawk Valley Pasture were seeded to crested wheatgrass in 1967. Sagebrush and other shrubs and native grasses have reestablished in the seeding. The native grass community is codominant with the seeded species.

The allotment has also been mapped by the Ecological Site Inventory (ESI) method. This inventory maps vegetation communities by soil units. The seral stage of the community, based on U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) descriptions, is also recorded. From these classifications potential vegetation communities can be determined. The names and the acreage for each vegetation type by seral stage are listed in Appendix E, Table 4.

Within these plant communities are individual plants that are identified as being used by Native Americans.

Cultural plants used by Native Americans are generally found on lithic soils with low sagebrush cover within the allotment. However, other plants identified as being used by Native Americans occur in other plant communities. Isolated plant species have been located, such as bitterroot and biscuit root, but present use is minimal. However, consultation is occurring with Native Americans concerning these cultural plants to aid in identifying the communities where they occur and to assist in their conservation.

Appendix E, Table 5, shows the plant communities by shrub and understory vegetation, acreage and seral stage for each community. Approximately 66% of the allotment is big sagebrush with a grass understory and 86% of this vegetation is in the mid-seral stage or higher. The most common understories in the big sagebrush-grass type is bottlebrush squirreltail (34%), bluebunch wheatgrass (15%), Thurber's needlegrass (16%) and Sandberg's bluegrass (12%). The low sagebrush-grass type makes up 28% of the allotment and 100% of this type is in the mid-seral stage or higher. The most common understory is Sandberg's bluegrass which occupies 95% of the low sagebrush community. Approximately 4% of the allotment is in one of the other vegetation types. The lakebed vegetation type is about 2% of the total acres, and about 92% of this type is in the early seral stage.

In general, the Jack Lake and Jack Creek pastures are dominated by the low sage community (78% & 77%, respectively). In Guano Lake pasture the Lakebed vegetation and other communities associated with lake beds are the dominant vegetation (58%). In the Spaulding pasture the big sagebrush communities are dominant with the most common understory being cheatgrass (41%) and bottlebrush squirreltail (33%). The Hawk Valley Seeding pasture is dominated by crested wheatgrass (43%) and big sagebrush with Sandberg's bluegrass in the understory (39%). In the

Clove pasture, big sagebrush is dominant (85%) and the most common understory is bottlebrush squirreltail (31%) followed by Thurber's Needlegrass (20%) and bluebunch wheatgrass and cheatgrass, both at 17%. The east side of the allotment which is currently one pasture is dominated by big sagebrush communities (73%) with bottlebrush squirreltail being the most common understory (34%). Bluebunch wheatgrass and Thurber's needlegrass are also common with each providing about 17% of the understory in the big sage community.

About 56% of the allotment is in the mid-seral stage. About 31% is in the late seral stage, and 12% is in the early seral stage. Most of the Jack Lake (84%), Jack Creek (90%) and Clove (76%) pastures are in the mid-seral stage. Guano Lake pasture is the one pasture with a majority of the acres in the early seral stage (87%). In the Spaulding pasture, 45% of the acres are in the early seral stage and 53% are in the mid-seral stage. The Hawk Valley Seeding has 40% of the acres in the mid-seral stage and 60% in the late seral stage. The east side of the allotment which is currently one pasture has 55% in the mid-seral stage and 36% in the late seral stage.

Three plant species identified as a concern in the scoping process are cheatgrass (Bromus tectorum), an introduced species, and two native plants, larkspur (Delphinium species) and death camas (Zigadenus venenosus). None of these plants are listed by Oregon Department of Agriculture or Lake or Harney County as "Noxious" but their presence in the plant communities influences management of the allotment. The invasion of cheatgrass into disturbed areas has changed the fine fuel loading related to fires. This fall germinating, annual grass can be highly competitive with native grass seedlings. Larkspur and death camas are deadly to livestock and their presence influences grazing management in areas of large infestations.

3.5.3 Cryptobiotic Crusts

The cyanobacteria, lichens, algae, mosses and liverworts which create the crust on soil surfaces have not been inventoried sufficiently in the allotment to use as guides to soil or plant community condition. From cursory investigations, these non-vascular plants do exist on the Beaty Butte soils, but none are in great abundance. Continued inventory on the Beaty Butte area and elsewhere in eastern Oregon (Jean Ponzetti, personal communication, 1996) could give information on the predictability of presence and structure of these crusts. At present ,little is known abut their ecology, presence before European contact, presence today, or response to fire. A standardized method was used to record cryptobiotic crusts in a few locations in the allotment. Lichen, cyanobacteria, and mosses are present but their density and cover is very low at the sites where measurements have been taken. No conclusions can be made at present from this data.

3.5.4 Noxious Weeds

Based on an extensive inventory completed in 1996, there are eight noxious weed species known to exist in the allotment: Canada thistle (Cirsium arvense) - six sites, Scotch thistle (Onopordum acanthium) - four sites, Yellow Starthistle (Centaurea solstitialis) - one site, Bull thistle (Cirsium vulgare) - ten sites, morning glory (Convolvulus arvensis) - one site, Mediterranean sage (Sativa aethiopsis) - one site, Halogeton (Halogeton glomeratus) - two sites, and hoary cress (Cardaria draba) - seven sites. These species are identified as "Noxious" by the Oregon Department of Agriculture and generally occur in small patches along roads, near water developments, and at other repeatedly disturbed areas. Known locations of these noxious weed populations is shown in Appendix E, Table 6. Each of the known populations is small. The Canada thistle sites have been hand grubbed at least once.

3.6 Rangeland

3.6.1 Livestock Grazing

The total number of AUMs of specified livestock grazing use in the Beaty Butte allotment is allocated in the Lakeview Grazing Management Record of Decision (BLM, 1982b). The amount of forage allocated to livestock is 26,121 AUMs. The season of use shown in the Record of Decision is April 1 through December 15. An evaluation of past management and trend toward reaching the broad MFP objectives was completed in December 1994 (BLM, 1994a). The evaluation is available at the Lakeview District BLM Office. In summary, the evaluation finds: 1) average utilization by livestock has been light to moderate, with areas of heavier use where livestock and wild horses have concentrated, and areas of lighter use where horses and cattle have not concentrated; 2) that the total number of AUMs of specified livestock grazing use has not exceeded the grazing capacity, but that distribution of use can be improved; 3) that 31% of the area has vegetation communities in Potential Natural or Late seral stage, 56% in mid-seral, 12% in early seral, and 1% classified as rockland, and 4) that trend in condition on the uplands is 81% static, 7% upward, 3% downward, and 9% unknown or rockland.

3.6.2 Wild Horses

The allotment contains a wild horse herd within the Beaty Butte Wild Horse Management Area (HMA; see Map 1). The appropriate management level is set at 100-250 and a census is conducted yearly. The excess horses are gathered and removed as numbers exceed the upper management level, usually about every 3-5 years (BLM, 1995c). Horse numbers are reduced to the lower level when gatherings occur. The wild horse use area is in the east side which is currently a single pasture and Hawk Valley Seeding pasture. Most of the utilization is on the eastern half of the area. Additional information can be found in the Beaty Butte Wild Horse Herd Management Plan (BLM, 1977) on file in the Lakeview District BLM office.

3.7 Wildlife and Fish Habitat

A listing of wildlife species known to occur or potentially be present in the allotment can be found in Appendix E Tables 12-14, and are arrayed by habitat type. The following discussion of wildlife and fish habitat is broken down into separate discussions of the following habitat types: wetlands, fish, and terrestrial.

3.7.1 Wetland Habitats

3.7.1.1 Lotic

Springs provide the only perennial water in the Beaty Butte allotment. They are critical as watering sources and to the wildlife, wild horse and livestock use of forage resources in the allotment. The BLM has files on 24 springs which have been developed to collect water and pipe it to troughs. These springs are on both public and private lands as shown in Appendix E, Table 7. Flow records from some of these springs are included in Appendix E, Table 8. There are other springs in the allotment that have not been developed.

The MC ranch, BLM and ODFW entered into an agreement in 1988 to fence several springs and pipe water to troughs outside the exclosures to improve wildlife habitat and to protect the water sources. The fencing was completed on both developed and undeveloped springs. Prior to the agreement, many of these springs had no or very small exclosures and none of the overflow channels were protected. Prior to fencing, the spring sources were impacted by concentrated livestock and wild horse use. Appendix E, Table 9, contains a summary of the springs involved and the amount of area and fence involved around each spring. The BLM portion of the Willow Spring outflow was excluded in 1983. These exclosures have been marginally successful at meeting their intended purpose. In some cases livestock have been allowed access to water in the exclosures because water has not been piped from the exclosure. In several instances in 1995, stock gained access to the exclosures due to gaps in the fence or opened gates. The herder for the MC cleared the stock from the exclosures when discovered, but several springs were impacted by the stock use. At other times, gates have been left open and wild horses have grazed the spring exclosures.

These springs are potential habitat for springsnails and isolated dace and tui chub species. However, neither springsnails nor fish are known to occur in any of the springs in the Beaty Butte allotment.

Other than short reaches of drainages associated with springs (Willow and Twin, for example) there are no perennial streams in the Beaty Butte allotment. There are major intermittent streams however. These include Guano, Sagehen and East and West Gulch. Little data is available on Sagehen and East and West Gulch. A stream survey was conducted on Guano Creek above the Shirk Ranch in August and September 1991. The data from this survey is summarized in Appendix E, Table 10. The survey was done on a quarter mile basis with condition ratings given for each segment. The lineal feet of bank erosion is for both banks in the segment, therefore each 1320 foot quarter-mile segment has 2640 feet of bank. The condition ratings are based on stream shade, channel movement, % bank cover, % silt, and channel movement.

In summary, Guano Creek from the Shirk Ranch to the Jack Lake pasture (BLM stream mile 0.0 to 4.0 +225') had 6.5% eroding banks. The stream was in poor condition for 0.25 mile, fair for 2.25 mile and good for 1.5 mile. This stretch had been managed by the USFWS and was rested for a number of years, but was used in 1994.

The portion of Guano Creek in the Jack lake pasture (BLM stream mile 4.0 +225' to 9.0 +990 feet) had 45.9% eroding banks. The stream was in poor condition for 3.5 miles and fair for 1.75 miles. Some segments of the stream had no bank damage, while others had 100% damage to both banks. From the photos, the areas with rocky channels were stable, but the deeper soil sites were in poor shape.

In 1996, a team of BLM and USFWS specialists surveyed Guano Creek from the Hart Mountain NAR to the Shirk Ranch to determine conditions using the FFC methodology. Guano Creek from the Shirk Ranch to Mile 4.1 above the Shirk Ranch was found to be in Proper

Functioning Condition. This reach includes all the lower Guano Creek area and the lower 1/2 mile of the Jack Lake pasture. Miles 4.1 to 6.0 and miles 8.25 to 9.25, all in the Jack Lake Pasture, were found to be Functioning At Risk with no apparent trend. Miles 6.0 to 8.25, also in the Jack Lake pasture were found Non-functional.

Photo points have been established on portions of Sagehen Creek and West Gulch, but they have not been retaken. There are two sets of photo points on Guano Creek, one from 1991 and the other from 1986. These photos indicate stable to improving conditions on lower Guano Creek, and static conditions in the Jack Lake Pasture.

A loose rock check dam project was completed in West Gulch in 1987. This project has been marginally successful at recovery of the drainage. Under a cooperative agreement with the MC ranch in 1988, a series of loose rock check dams and a riparian pasture fence was completed on Sagehen Creek. The MC contributed funds to this project and agreed to maintain the fence. Because of inadequate rock size, the dams washed out the next spring. The riparian pasture fence was effective at managing stock use for several years, but a misunderstanding of the agreement resulted in several years of use outside the agreed management constraints.

3.7.1.2 Lentic

Areas that are saturated or inundated by surface or ground water at a frequency and duration sufficient to support, and which under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions are defined by Federal policy as wetlands. This includes both the more typically envisioned wetlands (marshes, swamps, bogs, meadows) as well as riparian areas. For this document, riparian and wetland habitats are separated by the presence or absence of flowing surface water. Wetlands (i.e. lentic) habitat are standing water habitats such as lakes, ponds, bogs, marshes and meadows. Riparian (i.e. lotic) habitats are running water habitats such as rivers, streams and springs (BLM, 1993).

Based on the National Wetlands Inventory (NWI), conducted by the USFWS, there are approximately 8,270 acres of wetland or deep water (aquatic) habitat within the Beaty Butte allotment. These are described as habitat types (Cowardin et al., 1979) and do not correspond directly to the vegetation communities described in 3.5.1, though the habitat conditions described below influence which vegetation will occur on the site. These habitat types are divided into the following major categories which are defined in the Glossary: Aquatic Bed (33 acres); Emergent (4,025 acres); Unconsolidated Bottom and Unconsolidated Shore (139 acres); Scrub-Shrub (3,960 acres); Lacustrine (113 acres). The specific locations and delineations for these wetland types can be found on NWI maps available from the USFWS, Oregon Division of State Lands, or Lakeview Resource Area files.

The NWI further divided each of the above wetland types into smaller categories based on water regime (permanently, semi-permanently, seasonally, temporarily, and intermittently flooded), water chemistry (acidic, circumneutral, and alkaline), and special conditions (impoundments, excavations, diked, farmed, partially drained, and artificial). This additional information is available in Resource Area files; but it derives from a single point-in-time inventory, making the water regime modifier of questionable validity.

There are, however, generalizations that can be made about the wetlands/deep water habitats in the Beaty Butte allotment that can give a somewhat descriptive picture of the situation there. Nearly all of the named playa lakes (Jacks Lake, Guano Lake, Egg Lake, etc.) contain a core area of emergent wetlands, usually surrounded by a complex band of intermingled scrub-shrub and unconsolidated shore wetlands. This would seem logical, in that for the lake to be named, it would likely contain water a fair amount of the time; thus allowing the formation of an emergent plant community. The unnamed playa lakes are almost all either scrub-shrub (silver sage) communities, or unconsolidated (bare mud) bottom wetland types. They are the more intermittent or ephemeral lakes, containing water too seldom, apparently, for anyone to bother naming them. Most of the source areas for springs contain small (usually <1 acre) patches of emergent wetlands (wet meadows); and the lacustrine (lake) habitats are associated with impounded waters at reservoirs.

Over the top of this fairly simplistic picture must be laid the decidedly complicating factor of weather and precipitation patterns (i.e. water regime). Using Guano Lake as an example may be the simplest way of describing this, but the same general pattern holds for other wetland/deep water areas. In 1983 and 1984, Guano Lake was at its highest water level in recent history and an inventory taken then would have shown mostly lacustrine habitats, surrounded by a narrow band of scrub-shrub. The water levels slowly dropped through 1985 and 1986; and a diverse and ever changing emergent community formed: Arnica in deeper water; Carex, Juncus, Scirpus, and Eleocharus in shallower water. The drying of the lake continued in 1987 (when the NWI aerial imagery was taken), by which time the lake had very little open water and was densely covered by emergent vegetation. This drying of the lake continued until 1992, at which time the lake was completely dry except for a short period in the spring. During this period, the size of the emergent wetlands was constantly shrinking and being replaced by upland grass species such as squirreltail and creeping wildrye. Some water was present in 1993, for a short time making an emergent wetland community out of what had been upland the year before. By 1995, the lake was dry again and no wetland community was present.

From this one example we have the same spot that would have been inventoried as mostly lake in 1983; no lake, but mostly emergent wetlands in 1987; and no wetlands whatsoever in 1993. This is indicative of the dynamic state found throughout the allotment regarding wetlands/deep water habitats.

No complete habitat condition inventory for the allotment's wetlands has been conducted. The available data amounts to a 4% sample of the total (NWI) wetlands present and it showed 298 acres out of 312 acres (95.5%) in poor condition.

Waterfowl and waterbird use patterns throughout the allotment's wetlands mirror the complexity and dynamic nature of the habitats. During wet periods, usually after 2 or 3 consecutive above average precipitation years, several nesting pairs of waterfowl and/or waterbirds can be found at each of the emergent marsh/open water areas in the allotment. The most common nesters include cinnamon teal, gadwall, American avocet, kildeer, black-necked stilt, and green-winged teal. Appendix E, Tables 11-13, contain a listing of all species known to occur or potentially be present in the allotment, including those that use wetlands. The use of wetlands by migratory birds is also at its highest during wet periods. Flocks of a few dozen to several hundred can be seen on any of the larger water bodies; some just stopping overnight and others making extended feeding and resting stops there.

During drier periods the smaller playas dry and the larger lakes begin to shrink. The same species attempt to nest, but the decreasing amount of habitat available allows for less and less successful nesting as the drying progresses. Migratory use usually remains about the same during the drying phase, but the duration of the migratory stops seems to decrease. At the driest part of the drought cycle, little, if any, wetland habitat is available for either nesting or migratory birds.

3.7.1.3 Shirk Ranch Wetlands

On the area known as the Shirk Ranch (which is currently under USFWS jurisdiction, but would be managed by the BLM under Alternative 4), there are approximately 1,060 acres of various wetland habitat types. Using the same major groupings developed for the NWI (described previously), the Shirk Ranch wetlands are characterized as follows:

Emergent = 811 acres.
Unconsolidated Bottom = 19 acres.
Scrub-shrub = 72 acres.
Lacustrine = 157 acres.

The following list of waterfowl and waterbirds and their use of the Shirk Ranch is provided by the USFWS.

American Wigeon - Passes through area around October. Nesting has not been recorded on the Shirk, but perhaps does occur in Warner Valley.

Pintail - Greatest pre-molt migration of all waterfowl on Shirk Ranch. Peak numbers occur during July and August. Nests on Shirk.

Mallard - Later migrant, common nester.

Gadwall - Common nester. Many broods recorded at Shirk and Jacobs Reservoirs.

Cinnamon Teal - Most common brood species on Shirk. Fall migration occurs in September. Great Basin is the center of its summer distribution.

Blue-winged Teal - Not common. Several recordings on refuge during summer.

Green-winged Teal - Observed over the years, but not common.

Northern Shoveler - Few brood sightings on refuge, but a common nester in the Great Basin.

Lesser Scaup - Observed in small groups at Shirk. No nesting ever recorded on Refuge.

Canvasback - Rare nester, no brood observation on Refuge. Fall migrations have been observed occasionally on Refuge and surrounding area.

Redhead - Occasionally, significant numbers of post-breeding males have been observed. Prefers deep water marshes for nesting.

Bufflehead - Occasional fall migrant.

Ruddy Duck - Several broods have been recorded, but extremely rare nester.

Canada Goose - Has nested on refuge in relatively high numbers. Potential for increased use with appropriate habitat management.

Eared Grebe - Common nester at Shirk when water is available.

Pied-billed Grebe - Common nester at Shirk when water is available.

Some of this information is based on observations on other parts of the refuge, but can be generally extrapolated to the Shirk Ranch. Counts conducted by refuge personnel between 1979 and 1989, during May and June, indicate between 200 and 250 birds use the Shirk Ranch wetlands. Assuming that these were primarily nesting birds, this would give a total nesting population of between 75 and 100 nesting pairs.

3.7.2 Fish Habitat

Spaulding Reservoir contains a recreational fishery. The ODFW stocks this reservoir with hatchery raised trout each year and there is winter carry-over of fish most years. The amount of angling use on the reservoir is not known. Introduced trout occur in lower Guano Creek during high water years. The status of these fish is discussed below under Section 3.9.2.2 Special Status Species - Aquatic.

3.7.3 Terrestrial Wildlife Habitat

The Beaty Butte allotment supports a wide diversity of terrestrial wildlife. The allotment allocates 444 AUM's to resident, migratory, and sensitive species. The allotment provides yearlong habitat for a mule deer population which is at 65% of the management objective set for the 2,507 square mile Beaty Butte herd unit in the ODFW Mule Deer Management Plan. ODFW believes predation is the major limiting factor keeping the deer population below management objective (Larry Conn, ODFW personal communication).

The allotment contains crucial winter habitat for pronghorn antelope and serves as a migratory corridor between Hart Mountain and Sheldon Refuges. Pronghorn antelope within the allotment occur as an open population and sub-populations are known to seasonally move between the Hart Mountain NAR and Sheldon NWR. Consequently, overall status of the interstate herd is affected by population and habitat management on BLM and USFWS lands. Pronghorn antelope numbers have fluctuated over the years and recruitment is at an all time low. ODFW predation is the major factor limiting reproductive success with weather and competition with cattle for forbs also contributing (Larry Conn, ODFW, personal communication). The USFWS is currently in the second year of a two-year study examining the effects of predation, weather, nutrition and other factors on pronghorn antelope kid recruitment on Hart Mountain. Preliminary findings indicate predation by coyotes is a major limiting factor at this time. The lack of fire has also reduced the forb component in many of the vegetation communities.

Wildlife habitat condition in the Beaty Butte allotment has not been formally evaluated, however, it can be inferred from the ESI data for the area (refer to the vegetation section). Habitat condition is generally in fair to good condition with some problem areas identified. Better management since 1992 (lighter stocking rates and better distribution), maintaining wild horse management levels, and seep/spring protection have provided some improvement. However, competition between livestock and sage grouse/pronghorn for crucial forbs around waterhole concentration areas and pronghorn kidding areas continues to be a concern. There is some competition between California bighorn sheep and cattle/wild horses for water and forage.

Shrub-dominated, late-successional communities, which typifies a major portion of the allotment, is less than optimal wildlife habitat. Shrub/steppe wildlife species require an array of vegetative communities in a mosaic of successional stages providing both vegetative and structural diversity to support optimal numbers and kinds of species (species richness). Excessive shrub cover is restricting herbaceous production.

Pronghorn antelope habitat in the shrub/steppe is characterized by low, rolling terrain with low vegetative stature (10-18 inches in height). California bighorn sheep prefer remote, steep, rugged terrain. Western sage grouse and mule deer use a diversity of habitats. Meadows, lakebeds, and big and low sagebrush stands are used heavily by sage grouse, while mule deer require foraging areas close to cover.

Forbs are an extremely important food source for pronghorn antelope and sage grouse during pregnancy/lactation and brood-rearing, and a preferred food source when available. They switch to sagebrush in the winter when forbs are unavailable. Pronghorn antelope, like mule deer, eat early green-up grasses and forbs in the spring to replace energy lost on the winter range.

Water available to wildlife is limited to a few natural sources, livestock water developments (waterholes, reservoirs, and seeps/springs) and guzzlers constructed specifically for wildlife. Wildlife compete directly with livestock and wild horses for water, and indirectly for space when livestock are concentrated at water sites.

Since the development of pits within lakebeds, forb availability to sage grouse broods and pronghorn antelope and their young has been restricted to the wet zone directly surrounding the more permanent water (the developed pit). The waterline in an undeveloped lakebed provides more surface area for moist-soil dependent forbs to establish, and provides new forb habitat as the lakebed contracts in size. Guzzlers have been constructed in areas where water has been a limiting factor for wildlife.

The allotment contains relatively few miles of fencing compared to other BLM administered lands. Allotment and pasture boundary fences do not appear to be limiting population numbers, distribution or movement of wildlife at this time, nor have they caused significant mortalities.

Trees and shrubs are crucial hiding and thermal cover providing concealment and protection from heat or cold in the harsh shrub/steppe ecosystem. Shrub cover is not limited in the allotment, but tree cover is. Mountain mahogany and western junipers are the only trees present in the allotment.

The allotment also provides habitat for a variety of common sagebrush/steppe animals. A complete list of terrestrial vertebrates known or suspected to occur within the allotment is shown in Appendix E, Tables 11-13.

3.8 Threatened and Endangered Species

There are no federally listed threatened or endangered plants in the allotment. There are no known federally listed threatened or endangered animals residing within the allotment. However, Peregrine Falcons (Endangered) have been seen in the allotment, probably from the reintroduction site on Crump Lake located 7 miles to the west. Bald Eagles (Threatened) migrate through the allotment at certain times of the year.

3.9 Special Status Species

3.9.1 Plants

Two plant species listed by the BLM as "Sensitive Plant Species" occur within the Beaty Butte allotment. Both species are found growing exclusively on ash outcrops.

Grimy ivesia (Ivesia rhypara var. rhypara), is globally listed as "1: critically imperiled because of extreme rarity." The federal status is a "species of concern" (the former C2 category) and on the Oregon Natural Heritage list 1, the species is listed with the BLM as "Bureau Sensitive." The State status is "listed as a threatened species." Within the Lakeview BLM District there is one population of 31 plants covering an area of a quarter of an acre. The species also occurs within the Oregon BLM Vale District, within the USFWS Sheldon NWR, in the BLM Elko District, Nevada, and the BLM Surprise Resource Area, northern California.

The second species, Crosby's buckwheat (Eriogonum crosbyae), is globally listed as "3: rare, uncommon or threatened but not immediately imperiled." The federal status a "species of concern" on the Oregon Natural Heritage list 1, and the species is listed with the BLM as "Bureau Sensitive." The State status is "listed as a threatened species." There are four distinct populations within the State of Oregon: three sites are on public land within the Beaty Butte allotment, the fourth site occurs on State Land. A larger portion of the total populations of this species occurs on land managed by the BLM in Nevada and California. The Lakeview Resource Area is currently developing a Conservation Agreement with the other BLM Districts and the USFWS for both Crosby's buckwheat and grimy ivesia to ensure its future protection.

Other known sensitive species occurring in the Beaty Butte allotment are: four-winged milkvetch (Astragalus tetrapterus), Sierra onion (Allium campanulatum), Lemmon's onion (Allium lemmonii), and thickstemmed wild cabbage (Caulanthus crassicaulis). All four species are globally listed as "4: not rare and apparently secure, but with cause for long-term concern;" the Oregon Natural Heritage Program listed them as "species of concern which are not currently threatened or endangered." The BLM treats all four as "Tracking species". Policy does not require the BLM to mitigate for Tracking Species, but does encourage the BLM to track populations so that adequate status determinations can be made.

3.9.2 Animals

3.9.2.1 Terrestrial

The allotment contains habitat for California bighorn sheep, a Bureau Sensitive Species, which were introduced by ODFW in the winter of 1993. Other populations exist on Hart Mountain to the north and Swan Creek to the south in Nevada. The Beaty Butte and Swan Creek populations will likely merge into one if natural sheep movement occurs. Other than the sub-optimal bighorn sheep summer range habitat (identified by ODFW and USFWS) along a one-half mile corridor on the east backslope of Doherty Rim, bighorn habitat is generally adequate to support an expanding population. Key habitat is delineated on maps kept in the Lakeview Rresource Area Office.

There are 23 known western sage grouse (Bureau Sensitive Species) strutting grounds within the allotment. Sage grouse nesting success has been reduced due to increased predation in areas where there is little to no residual grass cover. Studies on Hart Mountain NAR have demonstrated lowered grouse nesting success in locations with residual native grass heights of less than seven inches (Gregg et al., 1994; Delong, 1993). Key sage grouse habitat is delineated on maps kept in the Lakeview Rresource Area Office.

There have been sightings of pygmy rabbits (Bureau Sensitive) within the allotment. Pygmy's prefer habitat islands (dense stands of big sagebrush in deep loose soils), and avoid areas of dense herbaceous understory, especially cheatgrass stands.

Other terrestrial special status species known or suspected to occur within the allotment are those common to the sagebrush/steppe environment. The list includes the following Bureau Sensitive Species: Western big-eared bat, ferruginous hawk, and the loggerhead shrike, greater sandhill crane, Swainson's hawk, western bluebird, desert lizard, short-horned lizard, pacific pallid bat, pika, white-tailed jackrabbit, white-tailed antelope groundsquirrel, small-footed myotis, long-eared myotis, fringed myotis, western burrowing owl, and northern sagebrush lizard. Inventories defining either populations or habitats for these species are lacking.

Other incidental or historical sightings of sensitive species include the yellow-billed cuckoo and one historical collection of a Columbian sharp-tailed grouse from Beaty Butte at the turn of the century (now extirpated) (Cushing, 1941).

3.9.2.2 Aquatic

The Sheldon tui chub (Gila bicolor eurysoma) was a former C2 Candidate for listing under the Endangered Species Act. It currently has no federal status. It is on the State of Oregon Sensitive Species list where it is listed as critical. The current BLM policy is to consider it a Sensitive species. Past reports indicate the occurrence of tui chub in Guano Creek up until 1934 (Hubbs and Miller, 1948). There are only few recent records of Sheldon tui chub on the Lakeview Resource Area (Williams and Bond, 1981). One record is from just below Piute (as spelled on USGS maps) Reservoir on Piute Creek, the other is also on Piute Creek just above the Beaty Butte allotment boundary. In 1985, a refuge biologist found chubs in the stomachs of trout caught in lower Guano Creek just above the Shirk Ranch. Piute Reservoir has since dried up due to a crack in the bottom of the pool. The site below Piute Reservoir is now being administered by the Oregon Division of State Lands. It is unknown if any chubs remain in Piute Creek.

Under a cooperative agreement with the Oregon Natural Heritage Program, Guano Creek and Piute Creek were surveyed in 1993 and '94, (Stern et al., 1993; Allen et al., 1994). No chubs were found in any of the habitats sampled in Oregon. It is believed that the permanent habitat for the fish is on the Sheldon NWR. In periods of high water, the fish move into Guano Valley and Piute Creek where they survive and reproduce until the next drought.

Cutthroat Trout (Oncorhynchus clarki spp.) were planted in Guano Creek in 1957. These fish were of Trout Creek Mountain stock (ie: Lahontan) (Memo from Oregon Department of Fish and Wildlife Biologist Oscar Deming, dated August 7, 1957). Since that initial planting, other fish have been liberated in the Guano Creek system. In 1963, 1964, and 1969 rainbow trout were released. In 1969, 1973, 1976 and 1979 other cutthroat trout were released. It is not known where these fish came from, but they were not from the Willow Creek stock (Wayne Bowers, ODFW, personnel communication, October 1994). Because of the introduction of non-Lahontan trout into the system, it is believed that these fish are no longer considered to be Lahontan.

Trout were caught at the Shirk Ranch in the high water years of the early 1980's (Bill Pyle, USFWS, personnel communication). In 1994, surveys of Jacob's Reservoir found trout. Except in high water years, trout have not been discovered below Jacob's Reservoir.

3.9.2.3 Wetland

Only two Bureau Sensitive wetland species are known to occur in the allotment, the black tern and white-faced ibis.

3.10 Special Management Areas

There are two types of special management areas in the allotment. Wilderness Study Areas (WSA's) are areas determined by the BLM to have met criteria described in the Wilderness Act of 1964 and reviewed under the authority of Section 603 or 202 of the Federal Land Policy and Management Act of 1976. There are no Areas of Critical Environmental Concern (ACEC), or Research Natural Areas (RNA) designated in the allotment. However, four RNAs have been proposed to meet vegetation community cell needs under the Oregon Natural Heritage Program. These are the Sink Lakes, Guano Creek, Hawk Mountain #1, and Hawk Mountain #2 proposed RNAs.

Wilderness designation can only be made by the US Congress. RNA and ACEC designations can only be made through the Land Use Plan process and cannot be made at the Activity Plan level. Therefore, no decision regarding designation of special management areas will be made as a part of this AMP process.

3.10.1 Wilderness Study Areas

The Beaty Butte allotment contains all or part of five Wilderness Study Areas (WSA's): Spaulding (all), Hawk Mountain (approximately 70%), Sage Hen Hills (all), Guano Creek (all), and Basque Hills (approximately 50%). During the wilderness study process, responsibility for management of wilderness issues related to Hawk Mountain WSA was given to Lakeview, and Basque Hills WSA was assigned to the Burns District. Management for all other issues on lands within the respective districts remains with the base district. Detailed descriptions of each WSA are found in the Oregon Wilderness EIS (BLM, 1989a) and the Wilderness Study Report (BLM, 1991a).

While these areas are all roadless (some vehicle ways do exist in the WSA's), and developments are substantially unnoticeable in the units as a whole, all contain some livestock grazing improvements. Below is a listing of such developments.

Spaulding WSA contains two spring developments, two wildlife guzzlers, five miles of fence, 11 small waterholes and reservoirs and 13 miles of vehicle ways within the 69,530 acre unit. Grazing within the WSA was estimated at 3,580 AUM's in the Wilderness EIS (BLM, 1989a). Spaulding WSA is recommended nonsuitable for wilderness in the Wilderness Study Report (BLM, 1991a). This report constitutes the official recommendation of the BLM on all Wilderness Study Areas.

Hawk Mountain WSA contains five small reservoirs or waterholes, six miles of fence, one spring exclosure and 25 miles of vehicle ways. There is a road into the northern portion of the WSA leading to a horse trap site. The WSA encompasses 69,640 acres and is recommended for designation as wilderness in its entirety (BLM, 1991a). Grazing use in the WSA is estimated at 3,994 AUM's from April 1 to December 15, in association with the Beaty Butte allotment.

Sage Hen Hills WSA contains one small reservoir along the north boundary road. Livestock use in this WSA is 485 AUM's. This 8,520 acre unit is recommended suitable for wilderness only in conjunction with the conterminous USFWS area (also known as Sage Hen Hills) on the Sheldon NWR.

Guano Creek WSA contains five miles of vehicle ways that are basically overgrown with vegetation, three small reservoirs and 1.5 miles of fence. Estimated livestock use is 575 AUM's in this WSA. All 10,350 acres of the WSA are recommended suitable for wilderness designation.

Approximately one half of the Basque Hills WSA is located in the Beaty Butte allotment. It contains 20 water developments, two developed wells, and two wildlife guzzlers. There are 74 miles of vehicle ways, 31 miles of fence and the remains of an old horse trap and cow camp. Livestock use in the Basque Hills WSA is 2,826 AUM's on the Burns District portion of the WSA and 3,750 AUM's in the Beaty Butte allotment. None of the 141,410 acre WSA is recommended for wilderness.

3.10.2 Proposed Research Natural Areas/Areas of Critical Environmental Concern

There are no designated RNA/ACECs in the allotment. There are four RNAs proposed. A decision on their status will be made based on a future Land Use Plan Amendment or Revision. No decision will be made at this time. Until the decision is made, they will be managed so that their potential RNA status is not affected.

3.11 Cultural Resources

3.11.1 Historical

The Shirk Ranch is a complex of sixteen buildings and structures remaining from an unknown number built between the early 1880's and the late 1970/early 1980's. Only one structure on the ranch dates to the latter period, and at least three date to the earliest period. Very recent excavations by the U.S. Fish and Wildlife Service have rebuilt the levee and pond structures north and northeast of the main compound. There are a series of fences, corrals, and stock pens, along with an animal paddock near the ranch buildings. Most of the older fences are intertwined with sagebrush, and wind deposited soils create a sloping effect away from each side of those fences. Exposed wood surfaces are subject to sand and snow blasting when the wind blows. Several pieces of historical farming/ranching equipment remain at the ranch, including a horse- or tractor-drawn road grader, a hay rake, a hay sled, and wagon remnants.

The abundance of buildings and building sites suggest the ranch prospered in its earlier years. Remaining buildings reflect the increasing prosperity of the ranch over time, as simple frontier board and batten gave way to more finished popular styles of building materials. Much of the older material was then reused in the ever-changing collection of outbuildings. What remains provides a good representation of events at the ranch through time. Existing structures and improvements include: 1) Main house, 2) Watertower, 3) Outhouse, 4) Blacksmith shop, 5) Old barn, 6) Woodshed, 7) Chicken Coop, 8) Root cellar, 9) Bunkhouse #1, 10) Bunkhouse #2, 11) Rocked Shed, 12) Animal paddock, 13) Old ranchhouse, 14) Main well, 15) Corral well, and 16) Fence System.

A grave site is located on a knoll just west of the ranch compound. It reportedly contains the burial sites of Bill Vickers and J. Gruenke who were chased to the Shirk Ranch by the Harney County Sheriff in August 1887, where they were shot while attempting to escape.

The ranch dump is south of the grave site knoll and west of the compound. No large pit appears to have been dug. Trash was deposited in loads on the surface. Ceramic, glass, metal and leather and wood items are present.

3.11.2 Traditional and Native American Religious

The Beaty Butte allotment lies within the Northern Great Basin Cultural Area. The historic and oral historic Native American occupants of the area used a subsistence system known as "Hunters and Gathers". This is a subsistence strategy which used the natural products of the land which could be hunted, fished or gathered growing wild in the countryside. While no animal husbandry or farming were practiced by people living in the area, great knowledge of the environment and skill at subsistence crafts was required. Subsistence was based on the yearly seasonal rounds during which different places within the territory of the band were occupied and exploited as plants and animals became available. At the time of the interruption of their past lifeways by Euroamericans, the Beatys Butte area was used by members of the Fort Bidwell and Harney Valley Bands of the Northern Paiute Indians for hunting, gathering, and collection of obsidian for stone tool manufacture.

Besides the occupation of the Beatys Butte area by the Northern Paiute who were using the area at the time of contact with EuroAmericans, there is evidence to indicate that the area has been used by Native Americans for over 12,000 years. The record of occupation can be broken down into four general time periods.

The earliest of these time periods is between 12,000 to 8,000 before present. Evidence of use of stone quarries in the area is indicated by artifacts of the Clovis and stemmed point types. These artifacts are characteristic of a period where large game such as bison, camel, and mammoth were hunted.

The next time period is between 8,000 to 700 years ago. This extended period saw the development of reliance on hunting all types of game (camel and mammoth became extinct), and the gathering of seed and plants that grew in the region.

The next period is that of the Northern Paiute from 700 to 200 years before present. Archaeological evidence indicates that the Northern Paiute replaced earlier people in the area around 700 - 500 years before present. Evidence exists in the archaeological record and oral history that those people were related to the Klamath Tribe whose territory is just to the west of this area. The Northern Paiute lifeway is similar to the previous time periods, one of hunting and gathering in a pattern of seasonal rounds throughout the territory as plants and animals were available.

While actually part of the Paiute period, the next time period begins about 200 years ago and continues to the present. During this time, EuroAmericans began to impact the cultures of the region as they explored and began to occupy the west.

Native American cultural resource sites within the allotment are classified into 8 categories as follows:

1) Lithic Scatters: Lithic scatters are areas where evidence of the production, refinishing and using of stone tools is present. They are indicated by the presence of large to small amounts of stone "flakes" which were produced in the use, refitting, resharpening and the production of stone tools. Usually these sites will not have any features such as houses, hunting blinds, stone rings, etc.. They seldom contain finished stone tools such as arrowheads. Often, exactly what type of activity took place at these sites, for how long and how often can not easily be determined.

2) Quarry/Workshop Sites: These sites are similar to the lithic scatters mentioned above, but are much more complex. These are sites where the procurement of stone for the manufacture of stone tools and the production of stone tools took place. They are found in areas where the required or desired type of stone was located. Cobbles of obsidian, basalt or cryptocrystalline silicate (CCS) were taken

from the ground and worked into cores which were used to produce flakes or blades from which other tools were made. Flakes or blades were worked through several stages to produce items such as dart points, arrowheads, knives, scrapers, drills and ornaments. Evidence of a quarry/workshop include the presence of tool stone, broken cobbles, waste flakes, hammerstones, and discarded broken tools which failed in the manufacture process. Beaty Butte allotment has numerous quarry sites present because of the large obsidian flows which are present in the area.

3) Occupation Sites: These are sites where evidence indicates that the people were living on a daily basis. They could include areas of winter villages, summer villages, small temporary campsites, temporary worksites, and special use areas. They are indicated by the presence of a wide variety of tools and features such as housepits, stone house rings, stone walls, plant processing areas, etc.. They can range in size from less than one acre to 640 acres. More often than not, these sites will have been used repeatedly through most of the time periods mentioned above. It is not unusual to find projectile points from the earliest period in a site with Northern Paiute occupation.

4) Burial Sites: These are sites where the remains of the deceased are placed for burial. They will often also be occupation sites.

5) Rock Art Sites. Rock art sites are abundant in the Beatys Butte region. They can range in size from one small rock art element taking up less than 6 square inches on the face of a rock, to sites which contain many hundreds or thousands of elements along a mile of rim. Both petroglyphs (carvings on stone) and pictographs (paintings on stone) are found in the region. Evidence exists in the region to indicate that the making of rock art in this area goes back several thousand years. While the exact function of these sites is unknown, evidence exists to indicate that they are often associated with occupation sites. They are considered by the Native Americans of the region to be religious symbols which are to be respected for the power they retain. It is probable that the rock art served a social function which helped to preserve the social solidarity within the group living in the area.

6) Hunting Sites. These are sites where game was hunted. They often contain stone blinds, drive walls or butchering evidence. Often they contain broken projectile points which show impact fracture damage to the tips of the arrowheads.

7) Rockshelters and Caves: Often the rockshelters and caves of the region were used for various purposes such as occupation, burials, storage or religious practices. Perishable items such as basketry, nets, cordage, sandals, matting have been found in such sites. Rock art is often present.

8. Traditional Use Areas: Information on traditional use has been collected from printed ethnographic works, Tribal consultation and personal communication (Linda Reed, Burns Paiute Tribe; Clarence DeGarmo, Ft. Bidwell Community Tribe). Often areas are remembered which were used or continue to be used for plant gathering, hunting, or religious purposes. While no specific sites other than Beatys Butte itself have been identified in this region, they are expected to be identified with further consultation.

Within the Paiute culture, the environment (the earth) is considered sacred. People are seen as a part of this environment. It is respected and protected through proper use of its resources. Activities on traditional use areas would include the collection of plants and/or animals for food, medicine, basket manufacturing materials, and religious uses. Most often, this activity would take place in the spring or summer seasons. Some hunting would take place in the fall. Religious use of sites in traditional use areas could take place at any time. Visits may be made to these areas by tribal elders and young people for teaching sessions. Camping in the area for several days while these activities take place would be common.

Some Paiute oral history deals with locations within the area, including a story of how Beatys Butte was created for the Paiutes by the Creator. Northern Paiute oral history indicated that the Surprise Valley peoples were created in this region and that they have always lived in this region. Sites which are of religious importance to the Paiute people are located throughout Lake and Harney Counties. Religious sites can be large areas within a landscape, or they can be a small artifact construction such as a rock cairn. An example of a large area would be a specific formation, such as a butte, which is important in the oral history of the Native Americans. These may have religious significance because they could be the area in which the Native Americans say that they were placed after creation by the Creator.

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3.12 Socioeconomic Conditions

3.12.1 Population/Demographics

Lake County, with 7,350 residents, is a lightly populated area whose economy is largely based on use of natural resources. Of the thirty-six counties in Oregon, Lake County is thirty-second in population (Bureau of Economic Analysis, 1993). In 1990, the population density was 0.9 persons per square mile compared to the Oregon statewide population density of 29.6, and the United States density of 70.3 persons per square mile (Bureau of the Census, 1992). Though there are two incorporated cities, Lakeview and Paisley, most residents live in unincorporated areas. While Lakeview has a population of about 2,500 people another 2,500 live in the immediate vicinity outside the city limits. About 350 people live in Paisley.

No towns, cities, or year-round occupied home sites or ranches exist within the allotment. Several cow camps (summer cabins) are present on private lands within the allotment which are used by herders during the grazing season. The closest rural center is Adel, about 15 miles to the west.

3.12.2 Local Economy/Business Climate

While the majority of public land in the allotment is in Harney County, the economic base (livestock and recreation) attached to the allotment is mostly in Lake County. About 31% of the private land in the allotment is in Lake County. In 1993, agricultural revenues contributed 48 million dollars and wood products manufacturing 66 million dollars to the county's economy, which is about 51% of the total output in Lake County. Government contributed about 12% of the total output (OSU, 1995). In 1994, tourism contributed nearly 7 million dollars, or 3%, to the local economy (Lake County, 1994).

Proprietors are a substantial component of total county employment (Appendix E, Table 14). This indicates many small businesses and self-employed individuals. The employment growth in the services sector reflects increased tourism, and development of services necessary to agricultural and other businesses. However, the Lake County economy is somewhat more concentrated in the goods-producing than the service-producing sectors, in comparison with the rest of Oregon (OSU, 1995).

Lake County is approximately 77% Federal lands, including the Lakeview District BLM, Fremont and Deschutes National Forests, and the Hart Mountain National Antelope Refuge. Each of these agencies provides a substantial component of employment to the local economy, approximately 25% of the total (OSU, 1995), as well as being a major source of influence on the economic and social fabric of local communities. Agriculture accounts for about 29% of the employment, and manufacturing 13%.

Livestock production is a major component of the county economy, providing 43% of the Lake County agricultural commodity sales (OSU, 1995). The base properties (private land) are used for pasture or hay production for winter feed while the public land is grazed mostly in the spring, summer and fall. With 77% of the land in Lake County being public, the current level of livestock production in the county is dependent on use of the public land. Livestock directly provides 21% of the employment and 11% of the earnings in the county (OSU, 1995).

Two ranches currently have permitted grazing use in this allotment. Both ranches also graze in other allotments in the Lakeview District. Grazing use in the Beaty Butte allotment is important to both ranching operations. One ranch consists of a consortium of 16 local ranchers. Ten of the members have formed an association which has applied for grazing use in the Beaty Butte allotment. Each of these members in the grazing association own their own ranches in the Warner Valley. Eight of the sixteen ranchers in the consortium have additional grazing permits in the Lakeview District. The average number of livestock in Lake County from 1990 to 1995 was 42,800 head. There are 26,121 AUMs of livestock use authorized on the Beaty Butte allotment, which is equivalent to 4,354 head for a six-month grazing season (April through September). This 4,354 cows would be about 10% of all the cattle in Lake County. Since 1993, the two ranches have turned out about 1,925 head per year on the Beaty Butte allotment.

The potential dollars generated from cattle sales with full permitted numbers would be over $1.6 million. The sales generated at the current stocking rates (1993-1996) have been approximately $820,000 (Willie Riggs, Lake County Extension Agent, personal communication). To calculate the total economic impacts of these cattle sales on the county, a multiplier must be used. The multiplier for the cattle industry in Lake County has been determined to be 1.5953 (OSU, 1995). Using this multiplier, the total economic benefit to the Lake County economy would be over $2.6 million

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under full permitted livestock numbers and about $1.3 million under current stocking rates.

Recreation is the next most dominant use of the land within the allotment benefitting the area economy. Hang gliding, dispersed camping, hiking, and occasionally, mountain biking occur in the allotment. The most substantial recreational use is made by hunters during the pronghorn antelope, mule deer, and sage grouse hunting seasons. Hunting activities contribute to the economy of the area through the purchase of goods and services (gasoline, lodging, food, meals). In 1994, tourism contributed nearly 7 million dollars, or 3%, to the local economy (Lake County, 1994).

3.13 Recreation and Visual Resources

The existing recreational use of the planning area with the most participants is big game hunting. Off-highway vehicle pleasure driving occurs to a lesser degree. Hang gliding use is increasing at the Doherty Rim launch area and leads to cross-country flights toward the Steens Mountain and beyond. An active landing zone exists in the shallow lakebed about 1.5 miles north of Highway 140 next to the west Beaty's Butte road. Fishing takes place at Spaulding Reservoir, which is stocked by ODFW. This opportunity has been lost during drought years when the reservoir dries up.

There are four Visual Resource Management (VRM) classes used to define the amount of modification that is allowed to occur to the basic elements of landscape features. The definitions for these Visual Resource Management classes are (BLM, 1982a):

Class I:	This class provides primarily for natural ecological changes only. It is applied to primitive areas, some natural areas and other similar situations where management activities are to be restricted.
Class II:	Within this class, changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the characteristic landscape.
Class III:	Within this class, changes in any of the basic elements (form, line, color, texture) caused by a management activity may be evident in, but should remain subordinate to, the existing characteristic landscape.
Class IV:	Within this class, changes may attract attention and be dominant landscape features but should reflect those basic elements inherent in the characteristic landscape.

The four basic elements defining each class are form, line, color, and texture. VRM classification is designated during the land use plan process and will not be modified by the approval of an allotment management plan. With the exception of the WSAs and the rim on the west side of Guano Valley near Shirk Ranch and the east end of Guano Creek the entire Beaty Butte allotment is identified as Visual Resource Management (VRM) Class IV. WSAs are considered Class II. The rim area near the Shirk Ranch is Class III.

Chapter 4
Environmental Consequences

4.1 Introduction

The following are either not present, are not a significant issue, or would not be affected by any of the alternatives: prime or unique farmlands, floodplains, hazardous or solid wastes, minerals, or minority groups. At present, no wild and scenic river designations exist within the allotment. With the exception of Alternative 4, none of the alternatives would have a direct impact on the lands program. Under Alternative 4, the jurisdictional transfer between the BLM and USFWS would result in the exchange of lands within and outside of the allotment. The impacts of this exchange are being handled by a separate, but related joint agency planning exercise and will not be discussed further in this document. However, the potential impacts resulting from the proposed changes in management under Alternative 4 (for those lands within the allotment) are discussed elsewhere in this section. There have also been several other tentative proposals to exchange some of the private land parcels in the northeast corner of the allotment for public land. Any such land exchange proposal would be addressed through the regular administrative process on a case-by-case basis. This would include public comment opportunity, and cultural and botanical clearances.

4.2 Hydrology and Water Quality Impacts

Groundwater is replenished by rain and snow, which filters through soil and geologic formations. This underground water generally moves slowly from mountains and uplands to lowlands and valleys, where it is discharged to springs and wetlands, and where it provides the base flow for streams throughout the allotment. The discharge can vary significantly in different areas, depending on the nature of the aquifer.

Vegetation can influence groundwater in one of two ways. The presence of an abundant vegetation cover can decrease the amount of water stored in the soil through evapotranspiration. Conversely, vegetation can help the groundwater table to rise by improving infiltration and by reducing surface runoff. Water tables can rise after removal of vegetation by fire or grazing. Reduced transpiration increases water available to recharge groundwater areas. This effect can be negated by the reduction in the amount and rate of infiltration from removal of soil surface cover and by disturbance during treatment of vegetation.

The hydrologic impacts of grazing intensity are related primarily to infiltration and runoff. Livestock grazing affects watershed properties by altering plant cover and by compacting soil, a result of the physical action of animal hooves. Reductions in water infiltration and storage reduce the magnitude and duration of flows during low flow periods. Soil compaction from vehicle traffic, livestock grazing and wild horse use can cause some precipitation to enter streams as surface runoff rather than through the groundwater system, thus slightly decreasing the amount of water available to enter the aquifer. Groundwater aquifers tend to moderate the runoff cycle and stabilize stream flows, thus minimizing the potential for streambank damage and initiation of instability. Reduced infiltration and percolation rates associated with soil disturbance, particularly in or adjacent to riparian-wetland areas, can reduce the rate or quantity of groundwater recharge and the amount and duration of summer base flows.

Water quality is described by the parameters listed in Appendix E, Table 2. These parameters are set by the State DEQ and list the beneficial uses associated with each parameter (DEQ, 1992).

The following parameters could be affected by livestock grazing as described. The parameter of Aquatic Weeds or Algae may be impacted by livestock grazing by increasing nutrient availability increasing attached algae in the streams of the allotment. Water quality impairment would occur if this increase results in exceeding pH or dissolved oxygen (DO) standards or impairs a beneficial use. The parameter of Bacteria (Fecal Coliform) could be effected by direct contamination of waters by livestock feces. Livestock grazing could effect the Biological Criteria by direct impact to riparian zones. Impaired macroinvertebrate communities over reference conditions would result in water quality limited designation. Chlorophyll a criteria applies to natural lakes and reservoirs. Spaulding reservoir would be the body most likely affected. Increased nutrient loads and runoff from grazing could affect this criteria. Grazing could influence DO levels by reducing vegetation which would shade the water, thus increasing temperature and biological oxygen demand from increased algae growth. Guano Creek is the most likely water to be affected by DO levels. Flow modification would not be impacted by grazing activities. However, irrigation and spring development could result in conditions that would impact aquatic life, especially macroinvertebrates. No standards have been developed for nutrient criteria in the Malheur Lakes Basin. Grazing can affect pH by increasing water temperature and DO levels. Sedimentation can be directly affected by livestock grazing due to increased runoff from reduction of soil holding vegetation and reduction of stream bank stability. If macroinvertebrates are impacted by increased sedimentation, the sedimentation standard could be exceeded. Temperature is impacted by grazing through reduction of stream shade and creation of more shallow and wide stream channels. Due to the limited amount of perennial stream flows it is doubtful that this criteria would be exceeded in streams such as Guano Creek or Sagehen Creek. By the time summer temperatures would raise the stream temperature, the stream has gone dry. The flowing channels from springs do not extend long enough for the temperature to exceed standards. It is not likely that grazing would impact total dissolved gas or toxics levels.

Alternative 1 - No Action (implement the MFP)

This alternative contains the greatest number of proposed waterholes. Water yield would not change, but storage through the summer would be increased. Development of the new waterholes would redistribute livestock use so that there would be less trampling and compaction at existing sites and increased compaction for longer periods at the new sites.

Use of the well at Guano Lake would remove water from the water table in the immediate area. Because this is about the lowest elevation in the allotment, there would be no effect on the springs.

This alternative provides for some season-long rest from grazing. This should result in an increase in ground cover and a subsequent reduction in overland water flow that would introduce sediments and nutrients into water systems. Impacts to water quality parameters from overland/upland effects should be minimal. Impacts to water quality as related to wetlands habitat are discussed below in section 4.7.1. If riparian habitats are protected and improving, water quality parameters should also be protected.

Alternative 2 - Eleven Pasture System

Impacts to existing waterholes would not change. There would be fewer new areas affected by compaction than in Alternative 1. The area at The Potholes would retain vegetative cover, but hydrologic functions would not be measurably changed. About one third of the allotment would be rested from grazing each year, allowing standing litter to intercept some snowfall and retain moisture in place. Timing of livestock use along Guano Creek should allow vegetation to regrow after grazing, providing bank stability during spring runoff, except in the late season use period when limited use of vegetation should provide bank stability.

This alternative provides for some season-long rest from grazing. This should result in an increase in ground cover and a subsequent reduction in overland water flow that would introduce sediments and nutrients into water systems. Impacts to water quality parameters from overland/upland effects should be minimal. Impacts to water quality as related to wetlands habitat are discussed below in section 4.7.1. If riparian habitats are protected and improving, water quality parameters should also be protected.

Alternative 3 - Current Management with Range Improvements

The impacts would be the same as for Alternative 2.

Alternative 4 - Jurisdictional Transfer

The impacts would be nearly the same as for Alternative 2. There would be no livestock grazing along Guano Creek. Grazing on the Shirk Ranch would not affect hydrologic function. Continued irrigation to provide vegetation for cover and forage for waterfowl and livestock means water would be spread out over the fields rather than gathering in Shirk Lake. Continued maintenance of the irrigation system would keep the current northward movement of Guano Creek water, rather than allow more of it to flow towards Guano Lake. The impacts to water quality under this alternative would be the same as Alternatives 2, except on Guano Creek. Because no grazing would occur on Guano Creek, water quality should eventually return to natural levels. This alternative improves water quality more than the other 3 alternatives that include livestock grazing.

Alternative 5 - No Grazing

Additional vegetative cover would be left on riparian/wetland areas. On streams, additional water would be stored in the soils in riparian areas as runoff is reduced in the spring and banks are better stabilized. As litter accumulates on uplands over the years, more water would be retained in place, decreasing overland runoff in the spring. Waterholes and reservoirs would intercept and store less water. It is not likely that the upland watershed affects on the hydrologic function of the area would be measurable. Water would no longer be pumped at the well at Guano Lake, there would be no draw down of the local water table. Livestock grazing would no longer influence water quality. However, impacts to water quality from roads and wild horses would still occur.

4.3 Soil Impacts

Management activities such as livestock grazing and prescribed fire have no effect on soil texture, (the relative proportions of sand, silt, and clay) but they can affect the structure. Structure, in turn, influences soil characteristics such as water availability and movement, heat transfer, aeration, bulk density, and porosity (Childs et al., 1989).

Alternative 1 - No Action (Implement the MFP)

As determined in the Lakeview Grazing EIS (BLM, 1982a) the implementation of the rest rotation grazing system would increase protection of the soil from erosion by increasing the residual ground cover. This indirect reduction in erosion would be across the allotment as a whole. The direct effect of building the proposed fences would be to concentrate the livestock into smaller areas for shorter periods of time than they have been in the past, which would increase grazing pressures on specific areas: water developments, along fence lines and corners. This action could have a negative effect on the soils in those limited areas because of trampling, hoof action and more intensive grazing in concentrated areas. These impacts would be somewhat offset by the rest and deferment in other parts of the grazing system. However, in areas where soils are already compacted by livestock use there would not be much change.

Alternative 2 - Eleven Pasture System

Those soils located around existing waterholes would be the soils most impacted by grazing. The soil groups that would be most effected in the North pasture is the shallow loam soils, the shallow loams on slopes and the claypans. The North pasture would be a large pasture (about 128,000 acres), but most of the cattle use would be near water holes which originate from springs around Beatys Butte. The soil groups in the Southeast pasture that would be most impacted by grazing include claypans, clayey, loamy and shallow loamy on slopes. These are the soil groups near water sources that would be most impacted by cattle congregated near and around the water. In the Southwest pasture the soil groups that would be affected from cattle grazing include mostly claypan soils, with smaller areas of thin claypan, clayey, loamy and shallow loamy on the slopes. In both the Southwest and Southeast pastures the claypan soils would be affected by the fence which divides the two pastures. The soil groups in Hawk Valley Seeding include mostly clayey and loamy, with some shallow loamy on the slopes. The soil groups in Guano Lake pasture that would be affected by grazing include wetlands and lake terraces which surround Guano Lake. The soil groups in Spaulding pasture that would be most affected by grazing include sandy loams and shallow loams. The soils groups in the west side pastures that would be most affected include mostly thin surface claypans, with lake terraces and wetlands soils around the many waterholes, and some loamy and clayey soils.

The most common soils group in the allotment (24%) is described as shallow loamy and grazing impacts would be in the North pasture where these soils are in the flatter areas near water sources. The effects of trampling would be seen near the waterholes where the cattle density and the utilization of vegetation is highest. These soils are stony and cobbly, which does provide some protection from trampling and results in distinct cattle trails being formed. The movement of these stone and cobbles from frost heaving during the winter would help to mitigate some of the effects of trampling. Resting this North pasture every other year helps mitigate the impacts of this trampling and compaction. Childs et al. (1989) reported that as organic matter percentage increases, soil bulk density decreases and porosity increases. By providing complete rest every other year the increased plant growth would increase the organic matter content near the water holes and would reduce the impacts of trampling. This also provides the soil surface with increased litter cover which helps protect the soil surface.

The claypan soils in the North pasture would be impacted somewhat differently from the claypan soils in the Southeast and Southwest pastures. The claypans in the North pasture are south of Beatys Butte and are part of a soil association and not directly adjacent to water. The impacts from trampling in these claypans are mitigated somewhat by the type of vegetation growing on these soils and the location of these soils. The dominant grass is Sandberg's bluegrass which greens up early in the spring. It is a short grass (six inches) without much biomass production. Because of limited forage and no nearby water sources the cattle do not loaf around these soils but tend to move through once and continue on to other areas. Therefore, these soils are not subjected to a high density of cattle hoof prints. Combined with rest from livestock grazing every other year and the herding of the cattle, grazing would have no significant impacts on the claypans soils in the North pasture.

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The claypan soils are very common in the Southwest and Southeast pastures and the location in the center of the pastures and near the best waterholes makes them more vulnerable to grazing impacts then in the North pasture. These claypan soils would be most impacted by grazing during the spring of the year when the ground is still wet and the dominant grass, Sandberg's bluegrass is green and actively growing. Under this alternative each one of these pastures (Southwest and Southeast) would be grazed early in the spring one out of four years. The other three years include two years of rest and one year of late season grazing.

There would be some compaction from cattle congregating along the fence in Sagehen Flats that divides the Southwest pasture from the Southeast. By dividing Sagehen Flat with the fence (Map 3) it would place the entire herd on one side of the flat and the cattle density, particularly in the spring, would result in some trampling impacts on the claypan soil. The herding within these pastures would be very important to mitigate these impacts and insure the cattle do not stay on one waterhole, especially in Sagehen Flat where most of the claypan soils are. The amount of rest from grazing in this alternative would benefit the soil especially near waterholes, by increasing the amount of ground cover and the organic matter content of the soil as discussed with the shallow loam soil.

The thin claypan soils are found on only 3% of the allotment and mostly on ridgetops and in the west side pastures. The cobbly and stony texture of these soils along with Sandberg's bluegrass being the dominant grass, protects these soils from heavy grazing over large areas, but does result in spots of heavy grazing pressure. These soils do have thin surface layers and can be significantly impacted by livestock constantly traveling through an area. The ridge east of Spaulding Reservoir is an example of a thin surface claypan area that has been impacted by livestock trailing into water at the reservoir. Under this alternative the livestock would be able to use the reservoir only about two months every other year at the most. This would reduce the impact from trailing and allow the trails to revegotate somewhat during the rest periods.

The rest-rotation system for the west side pastures (Table 5) would reduce the impacts of grazing to the thin claypan soils. This grazing system provides rest during most of the year and one full year out of every five years. By concentrating the cattle in one pasture for a four to six week period each year it eliminates the type of spotty overuse that occurs under season-long grazing. There would still be trampled areas around waterholes and along trails, but these areas would have some opportunity to rest and recover every year.

The clayey soils group is a major component of the allotment (16%) and is found throughout the allotment. This soil has clay in the surface layer and is more vulnerable to sealing up and restricting water infiltration. This problem is worse under high utilization levels and the resulting loss of ground cover. Tese soils would benefit from the rest periods. The herding and rotation of cattle should result in more even utilization levels and less heavy grazing. The final result should be increased ground cover across the allotment as a whole which would better protect the loamy soils.

The sandy loam soils group and the sandy soils group are the only soils in allotment where sand is present near the surface. These soils are especially susceptible to wind erosion if the vegetation cover is removed. However, these soils are generally found far (two to three miles) from watering sources or in the Spaulding pasture. In both cases under this alternative the grazing pressure on these soils will be minimal and therefore the erosion hazard from grazing is minimal. The Spaulding pasture would be used strictly as a trailing pasture in the spring and fall and used for only a few days with little or no use on most of the pasture. The fence proposed for construction through Buckaroo Pass would have some impact on these soils as the fence passes through sandy loam soils on the west side of Buckaroo Pass and cattle have a tendency to trail along fences.

The loamy soils group would benefit from the rotation system and rest in this alternative. These soils are found throughout the allotment, mostly in small areas and are highly susceptible to water erosion. The higher productivity of these soils tends to attract cattle to these sites and results in heavier cattle use on these soils. Cattle would not be on the same site every year and when they are in a pasture they would be herded to keep them from using the same site all season. The result would be increased ground cover and higher organic matter which would protect these soils from water erosion.

The soils found on the steeper slopes (20-70%) and on the mountains are either in the shallow loam on the slope or the loam on the slope groups. Both of these soils have a severe water erosion hazard, but are somewhat protected from grazing by the cobbly or stoney texture of the soil and the steep terrain. However, there can be heavy grazing in areas that are accessible just because so much of the area is steep and inaccessible. With most of the cattle in one pasture, more of the slopes would be impacted by grazing, but for a shorter period of time. However, the rest period would allow the easily accessible areas time to produce more ground cover and increase litter which reduces erosion.

With all soils, but especially with loams on a slope, the utilization levels are a critical factor in determining the impact of grazing. On these soils, sagebrush cover is less and, therefore, grass cover is critical to protect the soil. The rotation and herding is very important here as there is a correlation between vegetation utilization rates and the amount of soil compaction. One study of water infiltration, as related to the degree of forage utilization, found that infiltration rates on lightly grazed rangeland were 2.5 times higher than on heavily grazed rangeland and 1.8 times higher than that on moderately grazed rangeland. Another study showed that bulk densities were higher for soils subjected to heavy grazing than for soils under light grazing (Anderson, 1993).

The soils groups found in and around the lakebeds are lumped in two groups called the Lake terrace group and the wetlands group. These groups are mainly found in Guano Lake pasture and around Guano Lake and Shirk Lake. There would be some impact from trampling by the high density of cattle in this pasture in the fall every year. However the soil would be mostly dry by fall and the high shrink-swell potential of these soils reduces the impact of trampling. Grazing in the fall under this alternative reduces the major impact which comes from grazing these soils when they are wet.

Fire directly affects soil by consuming organic matter, altering nutrients, creating water repellent conditions, decreasing infiltration rates, and removing soil surface cover (Hungerford et al., 1990; DeBano, 1990; Childs et al., 1989). Fire significantly affects soil productivity because organic matter located on or near the soil surface is rapidly combusted. Although some nutrients are volatilized and lost to the atmosphere, some nutrients are made more available with fire. This is because fire acts as a rapid oxidizing agent that releases nutrients rapidly as contrasted to natural decomposition processes, which may takes years or even decades (Debano, 1990). Fire has played an important role in the nutrient dynamics of soils in this region. Prescribed fire and wildfire can burn organic matter, which in turn can change the availability of nutrients and cause changes in other chemical, physical and microbiological properties of the underlying soil. Where soils are shallow and have low natural fertility or are susceptible to erosion, fire can have a significant effect on soil productivity.

The most common soil group on the Beaty Butte allotment is shallow loam. There are six prescribed burn areas (1, 11, 12, 14-16, Map 3) that have shallow loam soils on 30% or more of the project area. Because of the shallow surface layer, a hot fire would impact these soils and would result in increased erosion. Therefore, prescribed fires on these soils need to be done under a prescription that minimizes exposure of the soil to high heat. On these shallow loam soils, getting a high percentage kill on sagebrush is not as important as minimizing damage to the soil.

In the prescribed burns numbered 9 and 10, the loamy soil on the slope is the dominant soil occupying over 50% of the area. Because this soil is a shallow loam soil and is on steep slopes the water erosion hazard is severe. A prescribed fire could have a significant impact on the soil surface if the fire is too hot or a heavy rain event should occur before vegetation reestablishes. The prescribed fire should leave even more vegetation and litter then in the shallow loam soil type and keep the burn as cool as possible. This would limit the damage to the soil surface litter, the organic matter in the soil and the soil microorganisms. The less damage done to the soil, the quicker the vegetation would recover and protect this thin soil from erosion.

The prescribed burned areas 3, 5, 7 and 15 (Map 3) contain large portions of sandy loam soils. These soils are highly susceptible to wind erosion if the vegetation is removed. Therefore, in these areas it would be necessary to burn in a mosaic pattern leaving strips and islands of vegetation and especially sagebrush to break the wind and reduce soil erosion. A cool fire would be beneficial, leaving as much litter as possible to reduce wind erosion.

The claypan soils group is found within five prescribed burned areas, but these are inclusions and the vegetation on the claypan soils is not generally dense enough to carry a fire, so there would be no impact from burning on this soil group.

The prescribed burned areas 2, 4, 8, and 13 (Map 3) contain mostly loamy or clayey soils. These areas also contain small areas of shallow loam or shallow loamy on the slope soils which would need some extra consideration to protect the shallow soils. The clayey and loamy soils would not be impacted by the standard fire prescription for sagebrush/bunchgrass communities found in southeastern Oregon. The prescription would include burning during the dormant season and creating a mosaic pattern with a 30-60% kill on the sagebrush. The post fire management would require sufficient rest (a minimum of two growing seasons) from grazing to allow the perennial plants to reestablish and set seed.

Hot burns would likely occur in limited portions of all prescribed fire units because of localized heavy fuel loads. These areas would experience short-term (three to five years) reductions in surface organic matter that may otherwise be decomposed into soil organic matter and provide protection to the soil surface. Hot burns would also cause reductions in plant nutrients, energy supply to microorganisms, and water storage capability and would increase the soil's susceptibility to erosion.

Alternative 3 - Current Management with Range Improvements

The impacts would be the same as described in Alternative 2 for all the soil groups in all the pastures except for the claypan soils in the South pasture. Without the fence dividing the South pasture into two pastures, there would not be cattle congregating along the fence and the trampling of the claypan soils found there. The areas around the waterholes in Sagehen Flat would not benefit from the extra year of growing season rest that is proposed in Alternative 2. However there would not be the same concentration of cattle around the waterholes as in Alternative 2. Most likely the trampling impact would be higher right around the waterholes, but less impact across the flat as a whole compared to Alternative 2. Herding would still be very important to keep the cattle from staying in the same place all summer.

Alternative 4 - Jurisdictional Transfer

The impacts would be similar to Alternative 2 for the area currently included in the Beaty Butte allotment. There would be impacts on the Shirk Ranch soils (which are in the lake terrace and wetlands group). These soils would not be affected by grazing until August when the soils generally would be dry. This would minimize the impacts of compaction. With the flood irrigation each spring and early summer there would be ample vegetation growth each year and this would mitigate the impacts of trampling. Livestock grazing impacts would discontinue on about 17,070 acres of upland and riparian habitat in the Jack Lake Riparian pasture.

Alternative 5 - No Grazing

Soil erosion would be less than in the other alternatives because livestock use around springs and waterholes would be removed. Wild horse use would continue, causing some continued disturbance and compaction. Over time there would be an increase in litter cover.

4.4 Air Quality Impacts

Air quality in the region would be largely unaffected by any of the five alternatives, and impacts would not be significantly different between the alternatives. The proposed prescribed burns would add water vapor, carbon dioxide, carbon monoxide, nitrogen oxides, volatile organic compounds, and particulate matter (smoke and ash) to the air during the time vegetation is burning (BLM 1991b). The prescribed burns would be conducted under the State Implementation Plan to minimize impacts to air quality. Smoke would normally dissipate within 24 hours of completing any burn. Individual burns would be conducted over a period of several days. It would take several years to implement all of the burns outlined in the alternatives.

4.5 Vegetation Impacts

4.5.1 Aquatic, Riparian and Wetland Vegetation

The wetland vegetation within the Beaty Butte allotment fluctuates with the extremely unpredictable rainfall. Water levels can vary drastically from one year to the next. However, over the long-term, there are trends that can be predicted and perceived. Relatively few wetland improvements can realistically be accomplished in the short-term; restoration is a long-term process. Moisture level is the main factor influencing these vegetation types, but they may also be affected by grazing of livestock and wild horses. The names for the wetland vegetation types described in Chapter 3 are derived from the dominant plant species of the overstory.

Alternative 1 - No Action (Implement the MFP)

In riparian communities, the limited aspen communities could eventually be eliminated due to the lack of fire. Fire is necessary for regeneration of aspen and removal of competitive vegetation such as sagebrush. Grazing by cattle and mule deer reduces the reproduction by eating young plants. In the limited areas where willows grow, livestock would continue to adversely impact the plants, either stunting or killing them outright, or eating regenerating sprouts. Stream recovery would continue to be hampered by cattle grazing along the stream channels. Streambank vegetation would remain inadequate for stream recovery in areas currently being impacted. In meadow and streambank vegetation, continued grazing would keep the lowered water table depressed, resulting in the invasion of sagebrush and upland grass species. In the marsh areas, little or no substantial change would be expected; however, the grasses would continue to be replaced by sagebrush. Stream channeling would probably stay about the same, and residual grass cover would remain limited. On the ponded dry playas, cattle and wild horses would continue to reduce the small amount of forbs.

Alternative 2 - Eleven Pasture System

If fire were reintroduced into the limited aspen communities, there would be an improvement in survival and vigor of the aspen stands. If there are no wildfires or prescription fires in dry meadows, sagebrush cover would increase. However, in adequate moisture years, early season cattle grazing would promote vegetation regrowth and prolong the availability of succulent forbs. Wet meadows could improve depending on the numbers of livestock, duration of use, and frequency of use. Along the stream banks, the aquatic habit could improve over existing conditions, but at a slower rate than Alternative 5. Grazing every other year would improve the sedges and rushes at a faster rate than grazing every year. There would be little change in the sodic flats or saline meadows.

In higher elevation lakes such as Sink Lakes, early grazing in really wet years would have little effect on the shore vegetation communities; however, in springs when the lakes are partially filled, livestock trampling and use of lake plants would cause the most damage and have the greatest negative effect. Late fall grazing would have little or no effect on the lakes as they would be completely dried out in most years. In years when water is higher, the effects would be detrimental to the shoreline and lake plant communities due to trampling and foraging by livestock and game.

Alternative 3 - Current Management with Range Improvements

Recovery of dry meadows would be greater than in Alternative 1 or 2. However, with extremes in precipitation and therefore available water, recovery of dry meadows and water tables may take decades. Wet meadows could improve with alternate years grazing thus lessening compaction, soil erosion and impacts to vegetation and allowing increased production and diversity of plant species. With the introduction of prescribed fire in both wet and dry meadows, grass species would increase and sagebrush invasion could be limited. This alternative would allow for the most rapid recovery of sedge/rush/grass communities if water regimens remain high. Long term recovery for the meadows under this alternative could take over 15 years. The sodic flats and alkaline meadows under this alternative could sustain greater forb cover; however, there would be few changes over the long term. There would be no or little change in the non-vegetative playas. Impacts on the aspen communities would be the same as Alternative 2.

Alternative 4 - Jurisdictional Transfer

Impacts would be similar to Alternative 2 with the following exceptions. The higher elevation wetlands of the Sink Lakes would benefit from removal of grazing. Any existing trampling, compaction of soils, disturbance to lake bottoms and removal of residual cover by livestock would be eliminated. Removing grazing would allow the natural desiccation of these vernal lakes to create a series of "bathtub rings" of forbs. The diversity and sustainability of these annual forbs would increase. Few other higher elevation wetlands would be affected. A larger portion of the riparian herbaceous vegetation along Guano Creek would recover naturally without livestock use, compared to Alternatives 1-3.

On the Shirk Ranch, water levels would continue to be dependent on Jacob's Reservoir. During years of increased precipitation, wet meadows would expand. Residual vegetation cover around playas would improve and expand. Cattail, bulrush, and burreed communities are dependent on relatively deep water and removal of grazing pressures. Depending on seasonality and frequency of use, the deep water areas of Shirk Ranch could have greater development of the cattail/bulrush/burreed communities, compared to existing (non-irrigated) conditions.

Alternative 5 - No Grazing

Grazing pressure would be removed and aspen community survival and individual plant recruitment would increase. The areas where deciduous shrubs grow along streams (such as willows) would rapidly recover and improve. The alternative would allow the most rapid recovery of wet and dry meadows, and with less soil compaction from grazing, riparian soils could be restored. The water table would rise and eventually swamp out encroaching sagebrush and shrub communities. Over the long-term (more than 10 years), stream lengths would increase with meanders developing in the stream. Even without fire, it would still take decades for these plant communities to reach potential. In all the wetland communities, residual vegetative cover would increase.

4.5.2 Terrestrial Vegetation

Alternative 1 - No Action (Implement the MFP)

Under this alternative, about half the acreage proposed for treatment in Alternatives 2-5 would be treated. Overall vegetative diversity would remain lower, shrub cover would remain higher, and grass/forb cover would remain lower than in the other alternatives. Livestock grazing would play a minor role related to improving vegetative diversity because grazing would not decrease existing shrub cover and because of scattered grazing distribution. The role of wild fire would remain and would play a minor role in vegetation change on the allotment as a whole.

The cover types would be affected in the following manner.

Desert scrub cover and Wyoming big sagebrush/grassland would change little. However, larkspur, cheatgrass and other weeds could continue to proliferate with continued intensive grazing. **Low sagebrush/grassland** cover condition would probably remain unchanged throughout the allotment, the age of succession would reach a later stage and shrub cover would continue to dominate over the long term. Vegetative conditions would decline because the mid-seral stage would expand as shrubs increase at the expense of the grasses and forbs. Livestock grazing would play a minor role at this stage of succession because the primary problem is excessive shrub cover which limits cover of forbs and grasses. Also, livestock distribution is scattered and they often avoid these rocky habitats.

Mountain big sagebrush conditions would be changed little, however, there would be long-term increase of shrub cover and overall decrease of habitat diversity.

Montane cover and **silver sagebrush playas** over the next 10 years would remain essentially the same as at present.

The cultural landscape created by crested wheat plantings would continue on the present trend if no action is taken. That trend is the gradual replacement of the grasses (both crested wheat and native bunchgrasses) and forbs by sagebrush and other shrubs (especially rabbitbrush).

A rest-rotation system with six pastures would provide longer periods of rest for areas that otherwise would be grazed season long. The season long rest and the growing season rest that accompanies a rest-rotation system should at least maintain the current plant composition and should improve plant composition around water sources. The much higher concentration of cattle in this system during the grazing period could result in higher use in areas that have been only lightly grazed previously.

The water development projects such as springs, pipelines, reservoirs and waterholes would also redistribute the livestock and result in areas being grazed that have not been grazed before. The better distribution of the cattle would reduce the pressure around the current water sources and improve the vegetation at these sites.

Most of the MFP approved vegetation treatment projects have not been implemented because of either a lack of funding or the current injunction on herbicide application. If implemented, the 36,840 acres of burning and seeding (Table 1) would change the composition of these areas by reducing sagebrush and increasing the amount of grass cover. The MFP also calls for treating about 500 acres via herbicide to reduce sagebrush. To date, about 600 acres of brush control has been implemented which included seeding as part of a past wild fire rehabilitation project. It is unlikely that native grasses were originally intended to be seeded under the MFP as native grass seed is more expensive than crested wheatgrass, and does not establish as reliably. However, current state regulations now require that several conditions be met before crested wheatgrass can be approved for planting. Use of native species rather than crested wheatgrass would likely mean a longer rest from grazing after treatment to allow plant establishment.

Alternative 2 - Eleven Pasture System

This alternative would reintroduce fire into the ecosystem through prescribed burns. The affect of this action on all cover types could be to increase grasses and forbs in a mosaic. This in turn could increase the diversity of the cover types and help reduce shrub cover, so grasses and forbs could reestablish.

Desert shrub cover would show little change regardless of alternative chosen. The proposed fence lines would concentrate livestock into smaller areas than they presently use, possibly causing an increase of soil disturbance and weed expansion.

Wyoming big sagebrush cover types would benefit from prescribed fire by decreasing shrub density versus grass and forb cover. The effect of livestock is discussed below, however, livestock do not contribute to the improvement or destruction of the herbaceous cover in this cover type. Wild horses are a significant factor in areas where they use the same location year after year, especially in areas where the habitat is already in poor condition.

Low sagebrush grassland cover could improve slightly, especially in the higher elevations. If fire could be introduced into this cover type, the diversity would increase substantially. However, as in Alternative 1 these areas are often avoided by grazing livestock.

Mountain big sagebrush cover would benefit from prescribed burns which would result in an early- to mid-stage succession possibly producing a larger amount of grasses and increase habitat diversity. Over the long-term, shrub cover in late succession stands could be maintained at a lower level, thus increasing grasses and forb cover. Depending on herding and ability to move livestock through areas, this cover type would benefit from the fences, however, the herbaceous cover would continue to be limited by high shrub cover in unburned areas. This alternative would not affect Mountain big sagebrush on steep slopes.

Big sagebrush-bitterbrush cover types could be improved somewhat by the placement of fences and reintroduction of fire. Herbaceous cover, however, would continue to be limited by high shrub cover in unburned areas. Annual late- season grazing could result in relatively high use of bitterbrush by cattle.

Montane shrub and **silver sagebrush** playas would remain much as they presently are. However, if silver sagebrush was burned, shrub cover could be reduced allowing grasses and forbs to exist and increase.

The proposed fence lines do not follow ecotones and would cut plant populations into fragmented parts. This alternative would also concentrate livestock into smaller areas than they presently use. Refer also to section 4.3 Soil Impacts, Alternative 2. In the rotation plan for the North pasture, grazing in early spring would begin in the northeast and move counter-clockwise, putting livestock into the same areas each spring, making herding important to keep the animals moving and avoid overgrazing.

The water developments would benefit vegetation at the spring sites due to protective fencing, but could have a negative effect on the area where the pipes deliver the water. Tank development increases the number of sites where livestock use would concentrate, but also reduces the total concentration at each site. The positive effect of these new water developments would be to facilitate the rotation and movement of livestock from traditional high use areas and distribute grazing in areas that traditionally have had little use.

Based on the premise that the reduction of natural fires from the ecosystem over the past 125 years has changed the composition of the vegetation favoring shrubby species, the reintroduction of prescribed fire could be beneficial to the allotment. Fire historically changed the landscape to a mosaic of a variety of habitats; fire also converted habitat from shrubland to grassland and maintained shrub cover at lower levels than currently exist (USFWS, 1994a). The proposed plan is to reintroduce fire into the system in order to simulate the presettlement mosaics and balance the composition of shrubs and grasses and forbs. The proposed prescribe burn areas are all within the mid- to late-seral stages of the plant communities, the positive effect of fire would be to increase the mosaic patterns, reduce the shrubby component, and increase plant community diversity.

The North pasture or the Southwest and Southeast pastures would be allowed to rest for an entire year every other year, which would be two years rest out of a four-year grazing cycle. In the Southeast and Southwest pastures, a portion of the pasture would be rested during the spring one out of four years and one out of four years it would be grazed in the spring and early summer. Therefore, the composition of the vegetation should remain at least equal to the current composition and should result in an increase in the more desirable grasses. The rest years might result in an increase of forbs both vegetatively and reproductively. In the North pasture, the grazing pattern would rely on herding and some areas may be grazed in the spring two out of four years.

There would be a greater concentration of cattle around the water sources because of the smaller Southeast and Southwest pastures. This would result in larger areas of heavy use than has been seen under existing management. However, no water source would be grazed for more than three months in these pastures. This would reduce the grazing of plant regrowth and allow for longer periods of regrowth.

In the Southwest pasture there would be early season grazing in one out of four years. During that one year the dominant vegetation community of low sagebrush/Sandberg's bluegrass would be most impacted because this grass greens up very early and would be grazed extensively. However, during the four-year grazing cycle there would be two years of rest and one year of late summer grazing. During the late season grazing other grass plants such as Thurber's needlegrass would receive a lot more use while Sandberg's bluegrass would be seeded out and mature, therefore less palatable.

The Southeast pasture is dominated by big sagebrush with a variety of grass species in the understory. The Thurber's needlegrass and the Sandberg's bluegrass are more common in the low sagebrush sites and where the terrain is gentler and less rocky. Idaho fescue and bluebunch wheatgrass are found more often on the slopes and where the terrain is rougher. Cattle density would be greater for a shorter period of time (compared to Alternative 1), which would result in more wide spread distribution of the cattle and more use on the Idaho fescue and bluebunch wheatgrass. However, this use would only be for two to three months every other year and should not result in any significant reduction in plant density or vigor. Meanwhile, there should be an increase in the density and vigor of Thurber's needlegrass and Sandberg's bluegrass plants as the additional rest would allow individual plants to seed out and to restore root reserves.

In the North pasture the rotation around Beatys Butte would be counter-clockwise every other year with a rest year in between. Therefore, herding would be important to keep the cattle moving, particularly in the early growing season, to limit the grazing of regrowth. The rotation by herding combined with rest every other year should result in an increase in the most desirable grasses like bluebunch wheatgrass, Idaho fescue and Thurber's needlegrass. During the grazing year there would be a higher concentration around water sources than under the historical use. However, the increased amount of rest should compensate for the higher concentration of use. There would be more trampling damage around the water sources and there could be some loss of vegetation cover as a result. However, the longer rest periods would allow for some recovery of these areas versus the traditional system where the areas of disturbance would be smaller but would have a very limited amount of time for recovery. Under this herding system the cattle would not be allowed to remain on a water source all spring and summer as they do in currently. As in the Southeast and Southwest pastures, the variation of the rotation would also alter the amount of grazing pressure on grass species between years. When an area is used early in the spring, the majority of the use would be on Sandberg's bluegrass and some on Thurber's needlegrass as these are the first grasses to green up and be available for grazing. Then as the cattle are rotated, the other grass species would be able to green up and reach maturity without any significant defoliation. As the summer progresses, the cattle preference changes to other grasses and Sandberg's bluegrass and Thurber's needlegrass are not grazed as much. By altering the rotation between years the grazing pressure on individual plant species is changed between years.

The grazing system itself would not change the amount or vigor of the sagebrush in any of the vegetation cover types. The sixteen prescribed burn projects have been proposed to reduce shrub cover, including sagebrush. These burns would result in a reduction in sagebrush and other shrub cover and an increase in both cover and production of grasses and forbs. These fires are proposed to improve the ecological condition and plant diversity of these sites and help achieve the objectives set for this allotment.

The proposed pipelines would all serve the same purpose, to better distribute the livestock and reduce pressure on the existing water sources. The reduced number of cattle that would water at a given water source would result in less trampling and improve the vegetation cover around the water source and allow it to recover more quickly during rest periods.

The proposed dirt tanks are intended to improve water availability and cattle distribution. The new tanks would increase utilization on vegetation around the new tanks, but reduce the grazing pressure around the existing tanks. The net result should benefit vegetation across the allotment by spreading out the use and reducing the utilization levels at areas that would be heavily grazed under traditional grazing.

The projects to fence out the Potholes and provide water outside the canyon, and to fence Spaulding Reservoir and pipe water outside would improve the vegetation around the water sources and still provide water for the livestock. The fence at the Potholes would improve the vegetation within the riparian area along the creek. The fence and pipeline at Spaulding would allow more vegetation to become established along the bank of the reservoir.

Burning and replanting of the Hawk Valley Seeding would create a third area for rotation and could relieve some grazing pressure from spring use elsewhere.

The west side pastures would have two new fences that would divide the west side into five pastures including the Clove pasture. The rest-rotation grazing system would use four of these pastures each year (Table 5). A different pasture would be rested each year. The rotation is designed to use the Jack Lake Riparian pasture early in the season so that vegetation along Guano Creek would have time to grow after the cattle left the pasture. The regrowth would provide cover and catch debris during the runoff the following spring. Also, the high water levels early in the spring (April-May) would protect much of Guano Creek from grazing. The early season grazing would occur three out of five years with one year of rest and one year of late season grazing. The late season grazing would be after the runoff had stopped and Guano Creek would be a dry creek bed. Late in the season the cattle would avoid grazing in the creek because the sedges and rushes would be too coarse and not very palatable.

The other four west side pastures would be grazed at different times throughout the season with the period of use changing each year. This would place differing amounts of use on different grass species each year depending on the species that was most palatable. Sandberg's bluegrass would be used more in the spring than in the summer. Bluebunch wheatgrass and Idaho fescue would not be grazed much in early spring, but would be utilized in the late spring and summer.

The shorter grazing periods (six weeks) provide longer recovery periods for the grass plants. The shorter grazing periods and smaller pastures also concentrate the livestock more and the pastures are grazed more uniformly. This would reduce the number of wolf plants and reduce the probability that the same plant would be repeatedly grazed while trying to regrow. Both Idaho fescue and bluebunch wheatgrass have been shown to respond better following grazing when the surrounding competing plants have also been utilized (Mueggler, 1972). The short grazing periods are also important to bluebunch wheatgrass because of the tendency of this grass to add root growth instead of leaf or shoot material following defoliation (Richards, 1984). Therefore a second defoliation is even more detrimental to bluebunch, while a rest period following defoliation would allow the plants to grow both root material and replace some above ground material.

Defoliating bluebunch wheatgrass in the late spring and before summer dormancy can cause damage to the health and vigor of the plant (Westenskow-Wall et al., 1994). Rotating the pastures reduces the opportunity for this damage to occur since a pasture is only grazed during this time period two years out of five at the most.

Alternative 3 - Current Management with Range Improvements

The minimal fencing proposed in this alternative would not have the cumulative effect that Alternative 2 creates. The fence location helps retain freedom of movement of wild horses and wildlife on the far east side of the allotment; but it cuts through a functioning plant habitat (mixed low sagebrush with tall sagebrush "islands") and could create different grazing patterns detrimental to that area.

The proposed prescribed burns and waterholes would have the similar impacts as described for Alternative 2. Post-fire management would be different because the lack of fences reduces the capability to exclude cattle from a burned area as effectively. To accomplish some of the burns, the rotation may have to be altered to allow grazing on the same end of the common pasture for two or more years in a row, or alternate pasture would be needed. This would be necessary to effectively rest burns areas from livestock grazing for at least two growing seasons. It is prolonged exposure to heavy use that appears to be detrimental to the native grasses after a burn. The additional water sources spread the cattle out, and therefore, reduce the area around a given water source that is exposed to heavy use. Horse use could not be controlled directly, so prescribed burns may need to be coordinated with periodic wild horse gathers.

The impact to vegetation would be similar to Alternative 2 with some differences around the major water sources. With the flip-flop system, there would be a year of rest but there would not always be the seasonal deferment that Alternative 2 would provide. Without the fences there would be some grazing around the major water sources every other year. Using herding to rotate livestock would reduce these impacts, but would not be as effective as the pasture fences. However, without the fences there would less concentration especially in the Southeast pasture as the cattle would naturally spread out more. Therefore the utilization levels would be lower than in Alternative 2, but the chance that an individual plant would have the regrowth grazed is greater under Alternative 3.

The fence and pipeline projects at Spaulding Reservoir and the Potholes would have largely similar impacts as Alternative 2. However, the impacts of the Potholes fence would be a little different in that cattle would probably be around the water gap for a longer period of time, but in lower concentrations because the cattle would be more spread out compared to Alternative 2. Therefore, the area of vegetation heavily impacted would be greater in Alternative 2, but the length of time the vegetation would be impacted would be greater in Alternative 3.

The prescribed burn and reseeding in Hawk Valley Seeding would have similar impacts as in Alternative 2. The impacts of the grazing rotation plan and projects proposed for the west side pastures would be the same as for Alternative 2.

Alternative 4 - Jurisdictional Transfer

Impacts to the different vegetative cover types are very similar to Alternative 2. These exceptions follow:

The BLM would acquire management of the Shirk Ranch and other isolated refuge parcels in exchange for transferring administration of part of the Jack Lake Riparian pasture to USFWS and excluding grazing from the rest of the Jack Lake Riparian pasture (about 17,070 acres total). Rest from livestock grazing in this area would result in an increase in vigor for many individual plants, especially near the major waterholes. However, there would probably not be a significant change in species composition unless fire or some other disturbance reduces the amount of shrubs.

Vegetation on Shirk Ranch would be impacted because of grazing and the amount and frequency of irrigation. Currently, the fields are only being irrigated by whatever water naturally floods the area. This is resulting in the return of shrubs and other dry land plants, especially in the north field. Under this alternative, the fields would be irrigated using the existing irrigation system. The upland shrubs would be flooded out and replaced by rushes, sedges and grasses like creeping wildrye. Grazing these fields would also result in a variety of vegetation cover types with stubble heights ranging from 2-3 inches to 2-3 feet.

The fence across the Jack Creek pasture to create four west side pastures would result in grazing three of the pastures each year and resting the fourth. Table 9 show the rotation pattern for these pastures under Alternative 4. The impacts on the westside pasture vegetation would be very similar to those impacts described in Alternatives 2 and 3. The only difference in this alternative is the cattle would be in a given pasture about two weeks longer on the average. This would result in a little more grazing of regrowth. In this alternative each pasture would receive a full year of rest once every four years instead of once every five years.

Alternative 5 - No Grazing

Overall habitat diversity would not change except within the areas designated for prescribed fire or if a wild fire occurs. In most of the allotment the shrub cover would remain high and forb and grass cover low. Mid-seral stages would gradually move towards the predominance of shrubs over grasses and forbs. However, using prescribed fire as a tool to increase grass/forb cover could increase vegetative diversity and nutrient cycling. Wild horses would remain a disturbance factor. A substantial improvement in the amount of residual cover would occur in some areas that have received heavy livestock use in the past (eg. around water developments) (USFWS, 1994a).

4.5.3 Cryptobiotic Crusts

Alternative 1 - No Action (Implement the MFP)

Investigation of these crusts in the allotment began in 1996. Previously established trend study sites have recorded cover provided by mosses and lichens since those sites were established. Presence of other components of the cryptobiotic crust were not recorded. Investigations of the crusts elsewhere in the Great Basin indicate that livestock grazing and ground compaction contributes to the loss of these stabilizing organic components (St. Clair and Johansen, 1993). The additional fences and pastures could concentrate cattle and wild horses more and this could result in additional loss of cryptobiotic crusts.

Alternative 2 - Eleven Pasture System

The new pasture fences could result in increased livestock and wild horse concentrations in some areas which could be detrimental to the crusts. Additional studies are needed to determine the relationships between cryptobiotic crust cover and livestock management. There has been little or no research on the effects of fire on crusts in the Northwestern Great Basin, however, research from other parts of the Great Basin suggests that the healthier the vegetation stand and the crusts are before the fire, the less impact there is on the crusts. Degraded sites, for both vegetation and crust cover, have a longer recovery time (estimated up to 100 years in Idaho and Washington) than healthy sites (BLM Workshop 1996, Boise, Idaho).

Alternative 3 - Current Management with Range Improvements

Under this alternative, the impacts to crusts would be similar to Alternative 2.

Alternative 4 - Jurisdictional Transfer

The impacts would be the same as Alternative 2, with the exception of the Guano Creek area (approximately 17,070 acres of the Jack Lake pasture) which would be excluded from grazing. Impacts to crusts in this area would be the same as Alternative 5. Impacts to any existing crusts at Shirk Ranch would be similar to impacts elsewhere in the allotment where grazing occurs.

Alternative 5 - No Grazing

Research conducted elsewhere in the Great Basin indicates that the non-vascular plants found on the surface of the soil have been damaged by livestock trampling, particularly during dry periods of the year (St. Clair and Johansen, 1993). These impacts would not occur under this alternative. Crusts would be expected to recover over the long-term. However, crusts would continue to be impacted by wild horses, big-game animals, and prescribed fire projects.

4.5.4 Noxious Weeds

The risk of significantly increasing noxious weeds or establishing new populations is low in all alternatives. Alternative 1 has the greatest potential to increase noxious weed populations because it proposes the greatest amount of project-related surface disturbance. Prescribed burning (proposed in all five alternatives) could also increase invasion risk, especially resulting from vehicle activities related to controlling the fires. The Lakeview Resource Area has a Weed Prevention Strategy (Appendix 4) which would minimize the potential for increasing weed populations. Most increases are likely to come from road maintenance activities and from vehicle transport (hunters, recreationists, permittees, and BLM staff) of plant material/seeds along roads and around waterholes.

Alternative 1 - No Action (Implement the MFP)

An active noxious weed identification and eradication program is already being conducted in the allotment under an existing Resource Area-wide EA (BLM, 1994a). This program focuses on preventing the establishment of new sites, aggressively controlling small sites or newly discovered sites, and containment of large, existing sites. Under this alternative, weed site treatment would continue in accordance with this existing direction. Treatment is on-going at many of the sites described in Chapter 3 (Appendix E, Table 6). The vegetation treatments (burn or spray) proposed would slightly increase the risk of weed invasion or spread by exposing soil and temporarily reducing competition from native plants on project sites.

Alternative 2 - Eleven Pasture System

The impacts would be the same as Alternative 1.

Alternative 3 - Current Management with Range Improvements

The impacts would be the same as Alternative 1.

Alternative 4 - Jurisdictional Transfer

The impacts would be the same as Alternative 1. There is some reduced risk on the approximately 17,070 acre area that would be closed to livestock grazing.

Alternative 5 - No Grazing

The risk of increasing weed infestations would be lower under this alternative compared to all other alternatives because the activities associated with grazing management (project related disturbances) would not occur. However, the risk for transport along road sides would still be present as recreational and hunting users could still introduce weeds in the future, especially in hay brought in for domestic horse use. The prescribed burns would have the same risks as in Alternatives 2, 3 and 4.

4.6 Rangeland Impacts

4.6.1 Livestock Grazing Impacts

Alternative 1 - No Action (Implement the AMP)

The increased number of pastures (six) would increase the permittee logistics and require additional riders and more pasture moves than the current management. This increased herding and expense would have a significant impact on both the permittees and the livestock. Cattle would have to be moved at least three times during the grazing season. The cattle may have to be driven longer distances than they can travel in one day. This creates a need to keep the cattle bunched up over night and then gathered again in the morning. This much handling could stress the cattle and reduce weight gain on calves. The 72 miles of new fence would require significantly more time and labor to maintain.

Alternative 2 - Eleven Pasture System

The three-pasture rotation would require only a single pasture move for the east herd in the southern end of the allotment. Most of the grazing management would be herding cattle around the large pasture to insure that the animals did not stay in one area all season. The fences would allow the riders to spend more time moving the cows within the pasture, and less time keeping the cows from leaving the designated grazing area. This alternative would still require great efforts from the permittees at the end of the year to gather cattle out of the large pasture.

Alternative 3 - Current Management with Range Improvements

Compared to Alternative 2, the single east-west cross fence would increase the time the riders would need to spend moving the cows herds. Compared to the existing situation, the cross fence would reduce the time spent chasing the cows back to the north or south pasture. Compared to Alternative 2, it would double the area the riders would have to cover to insure that the cows were not staying in one place making management of the south half of the allotment more difficult.

Alternative 4 - Jurisdictional Transfer

The impacts would be the same as Alternative 2 except for the Shirk Ranch and the west side pastures. The use of the Shirk Ranch would allow the cattle to be bunched up at the end of the summer on good forage and water. This would benefit the cattle and make the riders' job easier. It would increase operation costs because someone would have to irrigate the Shirk Ranch in the spring and summer to maximize benefits for waterfowl.

On the west side, the forage lost of the northern half of Jack Lake pasture would be mitigated by the use of the Shirk Ranch. This change would also reduce the number of pasture moves from three to two, which has some benefit to the cattle and the riders. There would be no change in the total amount of allowable livestock use on the allotment.

Alternative 5 - No Grazing

There would be a loss of about 14,000 AUMs currently being grazed, and 26,121 AUMs of specified livestock grazing. Between 2,000 and 4,000 cows would be required to graze other lands from April 1 to December 15. If other grazing lands are not found, the livestock would have to be sold. This would negatively impact the ranchers as herd size would have to be reduced and/or other available land would have to be stocked at a higher rate.

4.6.2 Wild Horse Impacts

Alternative 1 - No Action (Implement the MFP)

The six pastures and the 72 miles of fence would restrict horse movement and limit their ability to find water and feed during especially dry years. At the maximum herd level of 250 horses, these problems would not result in loss of the wild horse herd, but could cause serious stress during some years and would require opening all the gates in the proposed pastures to allow movement of horses. This number of pastures would keep the horses more separated and make breeding more difficult. This may result in the need to add more horses from other herds after gathering to limit inbreeding.

The proposed water developments would benefit the horse herd by providing more water sources over a larger portion of the Herd Management Area than currently exists. This would assist in dispersal. The burns, spraying and seedings would benefit wild horses by improving the quantity, quality and diversity of the forage available, provided the horses could be kept off these areas for a sufficient amount of time to allow herbaceous species reestablishment.

Alternative 2 - Eleven Pasture System

This smaller number of pastures (three) and fewer miles of fence (31) in the Herd Management Area compared to Alternative 1, would still cause some of the same impacts as Alternative 1. However, the horse herd would have bigger pastures to roam and it would take a serious drought before it would stress the herd. This particular pasture configuration would still allow the horses to roam freely along the eastern part of the pasture, which is where most of the horses are found.

The proposed water developments would benefit the horse herd by providing more water sources over a large portion of the Herd Management Area than currently exists. This would assist in dispersal. The proposed prescribed burns would benefit the wild horses by improving the quantity, quality and diversity of the forage available, provided the horses could be kept off these areas for a sufficient amount of time to allow herbaceous species reestablishment.

Alternative 3 - Current Management with Range Improvements

The single cross fence in east side of the allotment would be less impacting to horses, compared to Alternatives 1, 2, or 4. This fence would not restrict their movements much because they would be able to bypass it on the east side of the allotment.

The proposed water developments would benefit the horse herd by providing more water sources over a large portion of the Herd Management Area than currently exists. This would assist in dispersal. The proposed prescribed burns would benefit the wild horses by improving the quantity, quality and diversity of the forage available, provided the horses could be kept off these areas for a sufficient amount of time to allow herbaceous species reestablishment.

Alternative 4 - Jurisdictional Transfer

The impacts to wild horses would be the same as Alternative 2 as the Herd Management Area does not include any of the west side pastures or the Shirk Ranch.

Alternative 5 - No Grazing

Horses would have greater freedom of movement compared to the other four alternatives, particularly if existing internal pasture fences are removed. There would be fewer available water sources as no new water development projects would not be done and many of the existing waterholes would not be maintained. However, there would no longer be competition for water with livestock at existing waterholes. The proposed prescribed burns would benefit wild horses by improving the quantity, quality and diversity of the forage available, provided the horses could be kept off these areas for a sufficient amount of time to allow herbaceous species reestablishment.

4.7 Wildlife and Fish Habitat Impacts

4.7.1 Wetland Habitats

4.7.1.1 Lotic

All evaluations of the effects on the riparian resource that would be incurred through implementation of the various alternatives are based on how they would impact the basic components of a properly functioning riparian area. These items can be consolidated into the soil, water and vegetation within the riparian ecosystem. Grazing strategies must: a) concurrently meet the needs of both uplands and riparian areas, b) include riparian areas in separate pastures for specific management or c) exclude stock from riparian areas through fencing or herding (BLM, 1990a).

There is an extensive literature base that reviews various grazing impacts to riparian areas and stream habitats. Much of this literature assesses how different types of grazing strategies affect riparian condition. The management proposed in the Beaty Butte allotment alternatives is not specifically addressed, but much can be inferred. Experience in other parts of the Resource Area with similar systems is also available to create an accurate assessment of the impacts of the alternatives.

To some degree, riparian areas (specifically those that are associated with stream channels and springs) occur in all the areas designated for management in the various alternatives. Management activities would affect these areas to different degrees depending on the type of channel, the type of riparian area, the existing condition of the area and the type of management proposed. Many of these factors are not known at this time, so much of the following discussions are based on general riparian management concepts and may need to be refined as more information is obtained.

For the purposes of the following discussion, the impacts of the grazing program and associated projects are considered, but the impacts of wild horses are not. Horse use would result in degraded riparian conditions wherever they concentrate and are not excluded from the riparian area.

Alternative 1 - No Action (Implement the MFP)

Fourteen pastures would be available for use in the rest-rotation system. With this many pastures the number of options for management would be great. The impacts to riparian area condition would depend on the rotation, timing and rest sequences of the management implemented. Generally, rest-rotation grazing can improve riparian conditions, although the literature varies on the results observed. Platts (1991) ranked rest-rotation grazing a 5 on a scale of 1-10 (10 being best) for compatibility with fishery needs and Fair (Poor, Fair, Good, Excellent scale) for stream riparian rehabilitation potential. It was noted that gains made in rest years may be lost in the use years if the use was heavy. Riparian areas that have good recovery potential should improve under this management, but those with lower potentials will continue to decline.

Winward (1994) stated that in any system, stock must be removed to leave 7-15 cm stubble height in late season use. Platts (1984) reported improved riparian conditions in a single rest-rotation strategy, if grazing intensity was kept below 25%.

To complete an accurate and complete assessment of the effect of stock management or riparian systems under this alternative, the detailed system proposal including season, rotation, rest years, and use levels will need to be determined.

Spring developments and pipelines that remove water from the spring source would result in a decline of riparian conditions on the impacted spring. Water would be removed from the spring that would naturally be used to grow riparian vegetation.

Alternative 2 - Eleven Pasture System

The major riparian areas in the North Pasture are associated with springs and the East-West Gulch area. The majority of the springs have been fenced to exclude livestock, and as long and the fences are maintained and the gates remain closed, the protected areas would improve or maintain condition. Those areas not protected, such as East-West Gulch and the remaining unfenced springs and their associated overflow channels would be managed within the proposed pasture rotation. This rotation includes alternate years rest and season long use. This system would do little to improve conditions in unprotected riparian zones compared to the existing situation. The gains made in the rest year would be lost in the following season long use period. Because the existing conditions have resulted from years of back to back season long use, it is doubtful that the riparian systems would degrade further under this alternative.

The major riparian systems in the Southwest pasture are Sagehen Creek and a few scattered springs. The majority of the springs have been fenced to exclude livestock, and as long and the fences are maintained and the gates remain closed, the protected areas would improve or maintain condition. There are few, if any, unfenced spring areas in this pasture. Those riparian areas not protected, such as the majority of Sagehen Creek and any remaining unfenced springs and their associated overflow channels would be managed within the proposed pasture rotation. This rotation includes alternate years rest, late season and early season use (April to mid-June and mid June to mid-August). This system would maintain riparian conditions along Sagehen Creek and on the overflow channels of the unfenced springs. Unfenced spring sources would continue to be impacted, but should maintain present condition. Use in mid-June to mid-August would concentrate livestock on the remaining green areas of the creeks and springs. This use is too late to allow regrowth of vegetation along the water course to stabilize banks before the spring flows the following year. This is especially true for this area as it has limited summer flows. For this system to be effective at maintaining riparian condition, all livestock must be removed from the pasture at the end of the authorized grazing period and the pastures must receive total rest in the rest period. The excluded area of the Potholes on Sagehen Creek would eventually improve to near potential condition.

There are few, if any, unfenced springs in the Spaulding, Southeast, or Hawk Valley Seeding pastures. What riparian resources may be present which are not protected would be negatively impacted by the alternate years of late season use proposed.

Spring developments and pipelines that remove water from the spring source would result in a decline of riparian conditions on the impacted spring. Water would be removed from the spring that would naturally be used by riparian vegetation.

The major riparian system in the west side pasture complex is Guano Creek. Outside of this, there are few, if any, unfenced springs in these pastures and there are no known major drainages with riparian vegetation in these pastures. Grazing in the Jack Lake Riparian Pasture that contains Guano Creek would result in one year of rest, three years of early season sue and one year of late season use. Maximum use allowed would be to six inch stubble height on the herbaceous riparian vegetation in the late season use period. The early season use (with resulting stream side vegetation recovery) and restricted late season use should result in riparian improvement along Guano Creek.

Alternative 3 - Current Management with Range Improvements

Riparian areas of the North and South pastures would be rested on alternate years with alternate years of season long use. No improvement would occur on grazed riparian systems. Only those riparian areas excluded from livestock and wild horse use would eventually improve to near potential condition. Impacts on the west side pastures would be the same as in Alternative 2.

Alternative 4 - Jurisdictional Transfer

Exclusion of grazing in the Jack Lake Riparian pasture would result in faster recovery of the riparian area associated with Guano Creek. The riparian area would improve further with exclusion. Impacts in the other pastures would be as described in Alternative 2.

Alternative 5 - No Grazing

No livestock grazing would occur on riparian areas in the allotment. Where wild horses are excluded from riparian areas, those areas would eventually reach their full potential. However, horse impacts would likely result in declining riparian conditions within the allotment as a whole.

4.7.1.2 Lentic

Before discussing the consequences of the various alternatives to wetlands, some explanation of the terms and comparison parameters may be necessary. Two aspects of wetlands are considered here: 1) the ecological condition as a function of species diversity, composition and density compared against estimates of site potential; and 2) habitat conditions as a function of nesting (i.e. residual or post-grazing) cover and limiting factors as compared to estimates of habitat potential.

While a relationship does exist between ecological and habitat condition, especially in response to precipitation patterns, the removal of residual cover by livestock grazing can keep nesting habitat in poor condition while the overall wetland's ecological condition is improving or at site potential. This disparity between ecological and habitat condition ratings is often at its greatest during the first few cycles through a rest-rotation grazing system. Where possible, the consequences of the alternatives on these two wetland aspects are described separately.

Alternative 1 - No Action (Implement the MFP)

The Lakeview Grazing Management EIS (BLM, 1982a) states (Chap. 3: pg. 22) "Under rest-rotation, increased cover during the rest year is often lost with livestock use the following years. Depending on their potential, some riparian areas would improve while others would remain in their present condition. Area-wide, a slow upward trend can be expected" (wetlands were considered a subclass of riparian areas in the EIS).

The Lakeview Grazing EIS also stated:

> (Chap. 3: pg. 9) "Following implementation of rest rotation grazing, increases in Key Species would occur on portions of 9,122 acres of wetland vegetation..."
>
> (Chap. 3: pg. 26) "The proposed action" (i.e. the No Action Alternative for this AMP/EIS) ..."would improve about 70 percent of the riparian areas and wetlands..."

One aspect of the livestock management program, the impacts of construction and maintenance of waterholes or lakebed pits in playa lakes, was not discussed in the Lakeview Grazing EIS, particularly as this impacts wetland habitats. Typically, these lakebed pits contain between one and two acre-feet of water and are constructed at the lowest topographic spot in the playa, making them the first place to receive run-off water and the last place to dry out.

In acting as a collection sump for water, these pits have several negative impacts on wetland habitat quality. In the spring these pits must fill before any water spreads over the playa, delaying the onset of emergent vegetal growth, as well as, the hatching of aquatic invertebrates. In years with rapid and plentiful run-off water, this does not pose a problem of much consequence. In the drier near-drought years, this can be of more significance, however, by delaying the availability of cover and food for two to three weeks. Most migratory birds using these wetlands require a week or more of intensive feeding on high protein sources, such as aquatic invertebrates, before they are physiologically able to begin egg laying. If the initiation of nesting is delayed, so also must be the hatching of the eggs and the fledging of the hatchlings.

As the hatching and fledging dates are delayed further into the year, the likelihood of the playa becoming dry before the young birds are mature enough to fly to other wetlands becomes greater. With the drying of the playa, the last acre-foot or so of water is concentrated in the lakebed pit instead of being spread over the entire playa. While this does delay the complete drying of the lake by reducing the surface area exposed to evaporation, it does decrease the foraging area, as well as, the total food source available. A typical pit is about one-third of an acre in size, containing about three feet of very silty/turbid water which allows limited sunlight penetration. Without the pit, the water would be spread one or two inches deep over eight or ten acres. Sunlight penetration would be nearly total, the water very warm; forming an optimum growth medium for aquatic invertebrates for hatchlings to feed upon.

Other impacts to wetlands associated with these lakebed pits center on their concentrating of livestock around the pits for drinking water sources. Most emergent vegetation is removed by grazing, leaving little nesting or brooding cover. The physical disturbance to the nesting birds, including nest and egg trampling, is more pronounced when the livestock are concentrated at the lakebed pit, and the churning hoof action on the wet lakebeds tends to raise hummocks, providing drier sites for invasion of the wetland communities by drier site plant species.

The impacts identified as being associated with lakebed pit would apply to all of the following alternatives except for Alternative 5 - No Grazing. Even here, however, the impacts associated with concentrating the water in a pit would remain until such time as the pits either artificially or naturally fill with silt.

Alternative 2 - Eleven Pasture System

The rotation system proposed in the current North, Southeast and Southwest pastures should, with two exceptions, achieve the same improvement in both ecological and habitat condition as Alternative 1, but at a somewhat slower rate. This rate of improvement, however, could be as much a function of weather and precipitation patterns during the grazing cycle as of the grazing system itself. The two exceptions to the above are scrub-shrub wetlands associated with waterholes along fences between pastures. These areas would receive little rest through the grazing system, and consequently would show little improvement.

In the limited instances where the necessary habitat components (nesting, feeding and brooding habitats) are present, this alternative would maintain residual nesting cover into the nesting season on approximately one third of the area of these pastures. This would improve overall habitat condition whenever the precipitation pattern coincides with the grazing cycle. The greatest improvement would be seen in the Southwest Pasture, which contains the majority of the longer lasting emergent wetlands found in these three pastures.

In the Hawk Valley Seeding pasture there is only one small scrub-shrub wetland. Alternate years rest would improve the species composition, diversity and density (ecological condition) of the wetland community, but only very slowly as the area is adjacent to the primary livestock water source in the northern portion of the pasture. This site does not provide nesting habitat, primarily due to the combined limiting factors of no emergent marsh or brood waters present, along with the lack of residual nesting cover.

Annual post-growing season use in the Guano Lake and Spaulding Pastures would allow the wetland plant communities to improve in composition, diversity and density. Habitat condition, however, would remain poor due to the lack of residual nesting cover in the spring.

The five-pasture rotation proposed for the west side pastures would allow for an improvement in the ecological condition of the wetlands, progressing towards site potential at a faster than in the three-pasture rotation on the east side. All pastures would receive post-growing season use during the year preceding the rest year, limiting nesting habitat condition to poor in the rest year due to a lack of residual nesting cover. Following the rest year, grazing in the Jack Lake South and Corral Lake pastures would not occur until after most of the nesting season, allowing for improved habitat conditions one year in five in two of the five pastures. The other three pastures would be grazed early following the rest year, removing the residual cover and maintaining poor habitat condition unless sufficient regrowth occurs after grazing to provide cover and visual obscurity needed for fair (six inches) or good (twelve inches) nesting habitat conditions.

Alternative 3 - Current Management with Range Improvements

Alternate years rest for the North and South pastures would allow for improvement in the wetland community species diversity, composition and density at a rate dictated primarily by precipitation patterns. Habitat condition, however, would not benefit from this type of grazing. The residual cover arising from the previous rest year would be grazed each year during the nesting season on some of the wetland areas in the use pasture, while the new growth in the rest pasture would not attain nest concealing heights until nesting was well underway. This exposure of nearly all nests to predation would severely depress nesting success rates even in wetter years when all habitat components are present. The exception to this would be in the riparian exclosures, and in wetland areas used early in years when sufficient summer rain occurs to allow six inches of regrowth (fair habitat condition) or twelve inches of regrowth (good habitat condition). This is totally weather dependent and, for this area, totally unpredictable. The impacts for the Spaulding, Guano Lake and West Side Pastures would be similar to those discussed for Alternative 2.

Alternative 4 - Jurisdictional Transfer

The area being transferred to USFWS jurisdiction, as well as that area remaining under BLM jurisdiction, but excluded from livestock grazing (approximately 17,070 acres), would improve in both ecological and nesting habitat condition. Of particular importance is the wetland complexes associated with Clover Swale, Sixtyfour Lake, Billy Burr Lake and the unnamed lake south of Coffeepot Reservoir. These wetlands contain all necessary habitat components for successful waterfowl and waterbird nesting success; 75 to 100 nesting pairs is a reasonable expectation upon livestock removal. All of these areas have the potential to become nesting areas for greater sandhill cranes and black terns, both Bureau Sensitive Species. Additionally, the increased residual cover present on the uplands adjacent to the wetland areas would allow a wider dispersal of the nests, reducing the likelihood of predation losses. The rate at which these wetlands progress towards site potential and good habitat conditions would be determined solely by climatic conditions. The effects on wetlands on the rest of the allotment are the same as Alternative 2.

For the Shirk Ranch, the present situation against which the actions of this alternative are compared for analysis includes no current grazing use and no water distribution or irrigation to the meadow/wetland complex. This alternative introduces change factors that include (1) adding livestock grazing at the 1,500 AUM level starting no earlier than August 1 each year, (2) maintenance and operation of the water system to irrigate the meadows and to manipulate vegetal heights, densities, and compositions.

Forage production at the Shirk Ranch has been variously estimated (scoping, public meetings, tours) at between four and eight thousand AUM's, removed by a combination of haying and grazing. The upper end of the production range occurred during above average precipitation years when full operation of the irrigation system was possible. Severe drought conditions can and have reduced livestock forage production to essentially zero. Given the tremendous variability in production estimates, along the known major variability in annual precipitation, the level of livestock use proposed in this alternative (1,500 AUM's) appears to be a conservative starting point for an adaptive management approach.

The combination of livestock grazing and operation of the currently unused water distribution system should provide several beneficial impacts to both the wetland habitats and to the migratory and nesting species using them. Grazing would provide habitat openings and a diversity of cover heights within what is now a fairly dense and homogeneous emergent marsh/meadow complex. The uneven and spotty utilization pattern expected would develop a broad array of high-quality nesting, foraging, brooding, and migratory habitats. This habitat diversity would be further enhanced by the operation of the water distribution system during the summer, when the wetlands are currently drying and crucial emergent habitats are scarce.

Because of uncertainties about exactly what mix of habitats the proposed grazing level and water distribution would create, only very broad estimates of wetland species responses to these actions can be portrayed. Long-billed curlews and greater sandhill cranes should find the habitat mosaic especially attractive for nesting; increasing from only sporadic use to a sustained nesting population of 8 to 10 pairs. Puddleduck (mallards, teal, gadwall, pintail, etc.) nesting should increase markedly over that seen the last few years; assuming available water, a nesting population of 150 to 200 pairs would easily be supportable. For diving ducks (redheads, lesser scaup, canvasback), over-water nesting waterbirds (black terns, eared grebes, white-faced ibis, black-crowned night herons), and emergent marsh nesters (black-necked stilts, coots, Wilson's phalaropes) the amount and success of nesting would be determined by the water availability. In high precipitation years the total for these species could approach 200 pairs; falling to essentially zero in dry years.

Alternative 5 - No Grazing

The impacts associated with this alternative were analyzed in the Lakeview Grazing EIS (BLM, 1982a), and are summarized below:

> (Table 3-1) This table shows that all wetland/riparian areas would improve.
>
> (Chap. 3, pg. 15) "The maximum benefit to wetland species composition would occur under rest rotation and exclusion."
>
> (Chap. 3, pg. 22) "Elimination of grazing ... would allow wildlife habitat to improve, resulting in an upward trend."
>
> (Chap. 3, pg. 23) "Exclusion of grazing would result in rapid improvement of wildlife habitat..."

There is no reason, based upon more current information, to suspect that these conclusions are not still valid.

4.7.2 Fish Habitat

No impacts are expected to the recreational fisheries in Spaulding Reservoir under any of the five alternatives.

4.7.3 Terrestrial Habitat

Alternative 1 - No Action (Implement the MFP)

Under the authorized stocking levels of 26,121 AUMS, no significant impacts were recorded in the wildlife habitat impact analysis contained in the Lakeview Grazing Management EIS (BLM, 1982a). However, the construction of 72 miles of fence could significantly impact pronghorn antelope migration between Hart Mountain NAR and Sheldon NWR. It would create multiple barriers for pronghorn antelope to cross during their biannual movement. Fencing would also cause direct mortality to pronghorn antelope, mule deer, and sage grouse. The negative impacts of fencing would be minimized by adhering to standard BLM fencing specifications for wildlife (BLM, 1985a).

The implementation of a rest-rotation grazing system in conjunction with the proposed range improvement projects could positively impact some wildlife species by providing permanent water available to wildlife in more areas, reduce wildlife/livestock competition for forage and water, and potentially meeting objectives set up for the allotment. The increased livestock distribution created by water developments, could promote utilization in areas not previously grazed which could negatively impact some wildlife species.

Pronghorn antelope habitat would be improved. The management would provide 80% or more of the riparian stringer meadows associated with springs in Proper Functioning Condition and reduce the shrub dominant component, thereby, increasing grass/forb density and diversity (crucial to pronghorn antelope). Proper prescribed fire prescriptions (burn in a mosaic pattern maximizing edge effect and limiting the size of burned blocks) would secure thermal and hiding cover requirements of mule deer and other shrub-steppe species (small mammals and ground-nesting birds).

Alternative 2 - Eleven Pasture System

Though no significant impacts were recorded in the wildlife habitat impact analysis contained in the Lakeview Grazing Management EIS (BLM, 1982a), the construction of 30 miles of fence could potentially impact pronghorn migration between Hart Mountain NAR and Sheldon NWR. It would create multiple barriers for pronghorn to cross during their biannual movement. Fencing would cause direct mortality to pronghorn, mule deer, and other wildlife. The negative impacts of fencing would be minimized by: 1) adhering to standard BLM fencing specifications for not impeding wildlife movement (BLM, 1985a), 2) locating away from heavily used migration corridors, and 3) designing/orienting fences to allow migrating pronghorn antelope to cross fence lines the fewest number of times. The impact of fencing in this alternative would be less than under Alternative 1.

Grazing would still occur within crucial pronghorn antelope kidding habitat (i.e. the west side pastures as identified by the ODFW and USFWS) during the kidding season (May and June) and competition with livestock for forbs would still occur, but with a the rest-rotation grazing system, all pastures would receive a full year's rest and a portion of the used pastures would not be grazed during this crucial season.

Implementation of a rest-rotation grazing system in conjunction with the proposed range improvement projects could positively impact some wildlife species by providing permanent water available to wildlife in more areas, reducing wildlife/cattle/wild horse competition for forage and water, and could meet objectives set up for the allotment. The increased livestock distribution created by the improvements would also lead to heavier utilization in some areas which could potentially impact pronghorn antelope by reducing availability of forbs and grasses on upland summer range.

Pronghorn antelope habitat would be improved. The management would provide that 80% or more of the riparian stringer meadows associated with springs would be in Proper Functioning Condition and reduce the shrub dominant component, thereby, increasing grass/forb density and diversity - crucial to pronghorn. Proper prescribed fire prescriptions (burn in a mosaic pattern maximizing edge effect and limiting the size of burned blocks) would provide thermal and hiding cover requirements of mule deer and other wildlife species, and increase forbs for pronghorn antelope and sage grouse.

Alternative 3 - Current Management with Range Improvements

The construction of 12 miles of fence could impact pronghorn antelope migration between Hart Mountain NAR and Sheldon NWR. It could create a barrier for pronghorn to cross during their biannual movement. Fencing could also cause direct mortality to pronghorn, mule deer, and sage grouse. The negative impacts of fencing would be minimized by adhering to standard BLM fencing specifications for wildlife (BLM, 1985a).

The overall impacts of the fencing would be less than for Alternatives 1 and 2.

Limited water sources in the Beaty Butte allotment cause concentrated livestock use around waterholes used by pronghorn. The removal of the grass/forb component crucial to pronghorn kids would force animals to travel long distances between foraging areas and watering sites thereby increasing predation mortality.

The modified rotation grazing system on the east side would result in some competition for forbs between pronghorn and cattle during the kidding season in May and June. The North pasture where the cattle graze is dominated by Beatys Butte and contains very few pronghorn. Therefore, the greatest competition would occur in the south pasture every other year. Since the cattle would start the season on different sides of the South pasture each year, the impacts would be rotated. In the first year in the southwest corner there would be competition, in year two there would rest, and in year three the competition would be in southeast corner of the pasture. An improvement in the forb diversity would be expected that would benefit pronghorn antelope over the long-term.

The five-pasture rotation system on the west side would impact pronghorn antelope kidding in two of the five pastures each year. In the two pastures being grazed during May and June, there would competition for forbs between cattle and pronghorn antelope. However, three of the pastures would be rested during the critical kidding season of May-June. Therefore, pronghorn antelope in the two grazed pastures would be negatively impacted because of the higher livestock density but three of the pastures would be rested and pronghorn antelope would not be negatively impacted in these pastures. This rest-rotation system should also increase the production and diversity of forbs over time, which would benefit pronghorn.

Interim grazing management for the proposed prescribed burns could affect wildlife. If livestock are allowed to graze in the South pasture while burns in the North pasture (such as the Lone Grave Butte Burn, Mahogany Mountain Burn and Mudhole Spring Burn) are rested, there would be competition during those years for forbs. The situation would be reversed for the burns on the south end, such as the Stallion Waterhole Burn and the Hawk Mountain RNA Burn.

Alternative 4 - Jurisdictional Transfer

Impacts would be largely similar to Alternative 2. However, under this alternative the grazing and associated irrigation on the Shirk Ranch would impact some nesting ground birds and small mammals by reducing residual ground cover. However, under the expected light or slight use levels in this alternative, ground cover would not be reduced very much. In addition, the irrigation would increase vegetation production and benefit many wildlife species including small mammals and ground nesting/foraging birds. Cattle grazing would result in more habitat structure diversity within the plant community and provide new regrowth late in the season.

Competition between livestock and wildlife such as mule deer, pronghorn antelope, sage grouse and other species would be eliminated on approximately 17,070 acres in the Jack Lake Riparian pasture due to the removal of livestock grazing from that area. The other scattered parcels of USFWS land transferred to BLM administration would no longer require fencing, reducing the number of potential and existing barriers to wildlife movement.

Alternative 5 - No Grazing

Livestock removal would initially provide more forage for wildlife and increased residual nesting cover for ground nesting birds. Disturbance factors such as prescribed natural fire would have to be utilized to meet objectives 1 and 3 to increase density, diversity, and availability of nutritious young grasses and forbs and maintain browse productivity. A complete analysis of the no grazing alternative was completed in the Lakeview Grazing Management EIS. Wildlife impacts are summarized in Table 1-5 of that document (BLM, 1982a).

4.8 Threatened and Endangered Species Impacts

None of the alternatives would create any significant impacts to Threatened or Endangered wildlife. There are no Threatened or Endangered plant species.

4.9 Special Status Species Impacts

4.9.1 Plants

Livestock grazing, prescribed fire, or range improvement projects would not occur in the lower Guano Creek area (Guano Creek Pasture/Guano Creek Proposed RNA) under any of the five alternatives. Therefore, there would be no threats to those existing sensitive plant communities under any of the alternatives. The potential impacts to other sensitive plant species is discussed below.

Alternative 1 - No Action (Implement the MFP)

The Crosby's buckwheat has had little impact from grazing livestock or wild horses; however, monitoring plots have been established to evaluate this possible threat. The Conservation Agreement currently being written for grimy ivesia and Crosby's buckwheat, includes monitoring studies, and will drive future management direction for these species. Any proposed project sites, such as prescribed fire areas, would have to be surveyed for special status plants prior to project implementation, and adjustments made, if necessary, to insure little or no impact on these plants. It is unlikely that fire could carry on the ashflow sites, where the sensitive plants grow; however, fire equipment and human action should be restricted in these sensitive plant areas.

Alternative 2 - Eleven Pasture System

The potential impacts to Crosby's buckwheat and grimy ivesia would be generally the same as for Alternative 1. In addition, the implementation of fence lines and water developments, as planned, do not have an indirect or direct effect on any of the known sensitive plant species. Sensitive plants area are being monitored to determine the impacts of grazing and wild horses, and the Conservation Agreement currently being written will drive future management direction, especially regarding spring grazing. Because of mitigation such as herding cattle away from spring sensitive sites, not developing water holes or salting within easy access of sensitive plant sites, and deterrence of any type of surface disturbance near the plant locations, there should be no negative impacts from this alternative.

Alternative 3 - Current Management with Range Improvements

The potential impacts to Crosby's buckwheat and grimy ivesia would be generally the same as for Alternative 2.

Alternative 4 - Jurisdictional Transfer

The potential impacts to Crosby's buckwheat and grimy ivesia would be generally the same as for Alternative 2.

Alternative 5 - No Grazing

Livestock grazing would be removed from the entire allotment. Removing the potential threat of livestock grazing, hoof damage and soil compaction would benefit all of the sensitive plant species. There is documented evidence (Dayton, 1960) that livestock are known to eat the new growth and flowering tops of buckwheat species in the spring and early summer. The removal of livestock could increase the vigor and survival of the several buckwheat species and the ivesia in the allotment; however, the threat of wild horse and wildlife impacts (grazing, hoof damage and soil compaction) would still be present. Prescribed fire impacts and survey needs would be similar to Alternative 2.

4.9.2 Animals

4.9.2.1 Terrestrial

Alternative 1 - No Action (Implement the MFP)

The construction of 72 miles of fence could significantly impact California bighorn sheep movement by creating barriers to water sources and limiting natural sheep expansion to new areas. Fencing impacts could be minimized by constructing fences in areas not frequented by bighorns, however, many of these use areas are not known. Fencing could also be relocated to some degree, within the corridors shown on Map 2 or modified in design to allow more free-movement of bighorn sheep.

The increased livestock distribution created by the water developments could concentrate livestock use on intermittent lakebeds which previously had light or no use. This would negatively impact sage grouse utilizing forbs during the critical brood-rearing season by concentrating livestock use around waterholes. Forbs would be eliminated and sage grouse broods would be forced to travel to and from foraging and watering areas, thereby, increasing predation mortality. On the west side, the five-pasture rotation allows for some rest every year and year-long rest one out of five years. These rest periods would also allow for residual cover to develop which would be beneficial to nesting sage grouse.

There would be potential negative impacts to pygmy rabbits and loggerhead shrikes if brush control project areas shown on Map 2 involved critical habitat for either species. Brush control/seeding projects could affect white-tailed jackrabbits positively and burrowing owls negatively.

Alternative 2 - Eleven Pasture System

Implementation of this alternative would have positive effects on nesting sage grouse by increasing residual grass cover important for nest success (reduced visibility to predators), as well as bighorn sheep (forage enhancement). Otherwise, impacts to sage grouse are similar to Alternative 1. The impacts to California bighorn sheep would be similar to but less than Alternative 1. Impacts to white tailed jackrabbits and burrowing owls would be the same as for Alternative 1.

Alternative 3 - Current Management with Range Improvements

Implementation of this alternative would have positive effects on nesting sage grouse by increasing residual grass cover important for nest success (reduced visibility to predators), as well as bighorn sheep (forage enhancement). Otherwise, impacts to sage grouse would be similar to Alternative 1. The impacts to California bighorn sheep would be similar to, but less than Alternative 1 or 2. Impacts to white-tailed jackrabbits and burrowing owls would be the same as Alternative 1.

Alternative 4 - Jurisdictional Transfer

The impact would be largely the same as in Alternative 2, except the Jack Lake Riparian pasture (17,070 acres) would be excluded from grazing. With the livestock removal, sage grouse and other ground nesting birds in this area would initially benefit from the increase in forage and residual nesting cover. However, this would eventually lead to a loss of some young and nutritious grasses and forbs in this pasture without the disturbance caused by grazing. Other disturbance to the vegetation community, like prescribed fire may be needed, though no burns are currently proposed in that pasture.

The habitat for pygmy rabbits (within the Jack Lake pasture) would be negatively impacted if it is currently maintained by livestock grazing. Impacts to all other terrestrial wildlife species would be positive or have minimal negative effects for this alternative.

Alternative 5 - No Grazing

Livestock removal would have minimal effects on California bighorn sheep habitat. However, it may allow sheep to expand into unoccupied habitats where livestock bighorn competition for water or space previously occurred. If cattle were removed from pygmy rabbit habitat that is currently maintained by cattle grazing, and grass cover began to dominate the site, the impact to pygmy's would be negative. Impacts to all other sensitive wildlife species would be positive or have minimal negative effects for this alternative.

Livestock removal would initially provide more forage for sensitive wildlife and increased residual nesting cover for ground nesting birds such as sage grouse. However, this would eventually lead to undesirable habitat conditions. Prescribed fire would have to be utilized to meet objectives 1 and 3 to increase density, diversity, and availability of nutritious young grasses and forbs and maintain browse productivity.

4.9.2.2 Aquatic

The limiting factor to Sheldon tui chub habitat is lack of water. The proposed management would have no effect on water availability in the sites to which this species has access.

Based on professional opinion (see 3.9.2.2) the trout in Guano Creek are not Lahontan Cutthroat trout. The limiting factor to trout habitat in the allotment is lack of water. The proposed management would have no effect on water availability in the sites to which this species has access.

4.9.2.3 Wetland

There are only two wetland-associated Special Status Species in the allotment, the white-faced ibis and the black tern. For the white-faced ibis, only Alternative 4 involves the kind of extensive, tall emergent marsh vegetation needed for nesting habitat. White-faced ibis nesting habitat would improve under Alternative 4 and remain unchanged (nonexistent) under all other alternatives. Although black terns nest in much more varied emergent marsh environments, they are a colonial to semi-colonial nesting species like the ibis and require a certain level of stability and non-disturbance in their nesting areas for any major population increase. Alternative 4 would provide stability at both the Shirk Ranch and at the wetland areas going to USFWS management jurisdiction. Alternative 5 would also provide the necessary elements for improved black tern nesting habitat.

4.10 Special Management Area Impacts

4.10.1 Wilderness Study Areas

While Wilderness Study Areas are under consideration for wilderness designation, the Interim Management Policy (IMP, BLM 1995b) prohibits construction of new surface disturbing facilities such as waterholes or fence lines. Projects may be authorized if their effects on wilderness values in a WSA are found to be negligible.

Preliminary consideration of proposed projects in this plan other than the MFP proposals in Alternative 1 recognized the constraints of the wilderness IMP and projects were not proposed that would not be allowed. Because this AMP would in all likelihood be implemented prior to final Congressional resolution of the wilderness decisions, actions that would be allowed

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should the lands be returned to uses other than wilderness have not been considered at length.

Should the final non-wilderness recommendation for areas such as Basque Hills and Spaulding WSAs be adopted by Congress, then it would be possible in the future to consider projects such as additional waterholes and fence lines in those areas.

It must be noted that the livestock practices within an allotment do not reflect on the analysis of impacts within a WSA. WSA's, by law, are autonomous, and are the guiding force for analysis. It is change within the boundaries of the WSA per se that must be addressed and not any perceived benefit to the allotment as a whole.

Alternative 1 - No Action (Implement the MFP)

Hawk Mountain 1-146A - Several proposed water projects and fencelines in the MFP are identified within the Hawk Mountain WSA would not conform to the Wilderness IMP (specifically the requirement that the surface disturbing project must enhance wilderness values) and, therefore, could not be constructed while the area remains subject to IMP or if it is designated as wilderness.

Sage Hen Hills WSA 1-146B - A fenceline proposed in the MFP would not conform to the Wilderness IMP (specifically the requirement that the surface disturbing project must enhance wilderness values) and could not be constructed under the IMP or if the area were designated as wilderness.

Spaulding WSA 1-139 - Fenceline and water projects are identified in the MFP within this WSA would not conform to the Wilderness IMP (specifically the requirement that the surface disturbing project must enhance wilderness values) and, therefore, could not be constructed under the IMP or if the area were designated as wilderness.

Guano Creek WSA 1-132 - Water development projects are proposed in the MFP that would not conform to the Wilderness IMP (specifically the requirement that the surface disturbing project must enhance wilderness values), and could not be constructed under the IMP or if the area were designated as wilderness.

Basque Hills WSA 2-84 - Fenceline proposals in the MFP could potentially meet the IMP directives after specific environmental assessments are prepared to determine that the fence would enhance wilderness values. Water developments would not meet IMP or wilderness enhancement criteria, as visual impacts from structures and livestock disturbance would not meet the naturalness criteria.

Alternative 2 - Eleven Pasture System

Hawk Mountain 1-146A - The current authorized use within the WSA is 3,994 AUM's from April 15 to December15 each year. The proposed rotation system involves using the area from April to mid-June in one year with a year of rest before using the area again mid-June through mid-August, then rested on the fourth year. The average livestock use over a four year period is the same, but the use is increased every other year from the current authorization (Alternative 1). While the WSA encompasses over 69,000 acres, water distribution and terrain limit cattle grazing to approximately one third of that area. This would essentially place an undetermined portion of 7,000-8,000 AUMs of use in the entire pasture in a two month early period one year; 0 AUMs of use the second year; an undetermined portion of 6,000-8,000 AUMs in a late season period on the west half of the WSA and out onto Sage Hen Flats the third year; and 0 AUMs of use the fourth year. Areas around existing water holes in the WSA would show increases in trampling and utilization of vegetation every other year. There would be no livestock grazing on the waterholes every other year. More intensive grazing, especially along the west side of the WSA in the low sage areas would impact the visual aspect of palatable species near water sources every other year. Nothing in the proposed change of grazing use would enhance wilderness values in the Hawk Mountain WSA.

Prescribed fires, proposed within the WSA could enhance wilderness values with regard to the natural vegetative component. The initial fire impacts of blackened vegetation, soils etc., would be indistinguishable from natural fires.

The Burns District is proposing a well just outside the Hawk Mountain WSA in Long Draw near the Nevada State line east of the WSA. This well is proposed to supply water to winter use cattle (200 AUMS) in the Burns District east of the Beaty Butte allotment representing a decline in livestock use in this highly sensitive area which also contains an existing RNA. Reducing livestock use in the Long Draw area would enhance wilderness values. As noted earlier, the cumulative impact of all projects in a WSA, or affecting a WSA, must be considered in evaluation of impact on wilderness values in the WSA as a whole.

Sage Hen Hills WSA 1-146B - This small WSA would be grazed in conjunction with the Hawk Mountain WSA. As such, the impacts would be similar to those described for the Hawk Mountain WSA.

Spaulding WSA 1-139 - [illegible] Rim spring and the area south of the road are particularly susceptible to trampling if livestock concentrations increase in these areas under this rest-rotation system. If use increases

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above the rim, it could also impact the natural condition of the Sink Lakes south of Double Rim Spring, resulting in a negative impact on wilderness values. If increased use does not occur, effects on wilderness values would be negligible.

With the grazing use throughout the Southwest pasture at levels of from 7,000-8,000 AUMs early one year, followed by 0 AUMs of use the second year, 6,000-8,000 AUMs late the third year, and 0 AUMs of use the fourth year, increased areas of utilization would be visible every other year. Some of these areas of increased use could occur inside the WSA boundary. The average livestock use over the four-year rotation would be the same or lower, but every other year the use would be higher than under the current authorization. A portion of this increased use would occur in the Spaulding WSA. The new regimen would lead to an undetermined, but perhaps significant increase in AUMs used every other year within the Spaulding WSA compared to the estimated 3,580 AUMs that occurred annually within the WSA at the time of the wilderness inventory and decision.

The area around the Potholes and the south end of Sage Hen Canyon are proposed to be fenced in an exclosure to protect riparian values. This would offset grazing impacts, yet would have a minor visual impact on the WSA. Nothing in the proposal related to changing grazing use would enhance wilderness values in the Spaulding WSA.

Guano Creek WSA 1-132 - No change in effects would occur to wilderness values compared to current authorized use.

Basque Hills WSA 2-84 - The prescribed burns proposed could restore a more natural component to this area. Due to lack of water and forage over much of the Basque Hills WSA, impacts from the change in grazing regimen could lead to increased local impacts around Surveyor Lake and isolated water holes.

Alternative 3 - Current Management with Range Improvements

Hawk Mountain 1-146A - Wider distribution of cattle would reduce impacts visually and mechanically within the WSA compared to those described in Alternative 2.

Sage Hen Hills WSA 1-146B - Wider distribution of cattle would reduce impacts visually and mechanically within the WSA compared to those described in Alternative 2.

Spaulding WSA 1-139 - Wider distribution of cattle would reduce impacts visually and mechanically within the WSA compared to those described in Alternative 2.

Guano Creek WSA 1-132 - Impacts would be similar to Alternative 2.

Basque Hills WSA 2-84 - Wider distribution of cattle would reduce impacts visually and mechanically within the WSA compared to those described in Alternative 2.

Alternative 4 - Jurisdictional Transfer

Hawk Mountain 1-146A - The impacts to wilderness values would be similar to Alternative 2.

Sage Hen Hills WSA 1-146B - The impacts to wilderness values would be similar to Alternative 2.

Guano Creek WSA 1-132 - An enhancement of wilderness conditions will occur based on recovery of upland conditions in the WSA and riparian conditions along Guano Creek. Future decisions related to Jacobs Reservoir and the flow of Guano Creek make it impossible to accurately relate the final outcome of impacts for this WSA.

Spaulding WSA 1-139 - The impacts to wilderness values would be similar to Alternative 2.

Basque Hills WSA 2-84 - The impacts to wilderness values would be similar to Alternative 2.

Alternative 5 - No Grazing

Hawk Mountain WSA 1-146A - Uplands in this WSA near the central portion would remain at potential natural community. Recovery of playa lakebed pits (Stallion Waterhole and in the Hawksie Walksie basin) would eventually recover natural appearance with the lack of maintenance. Because the native species composition across most of Hawk Mountain WSA is still viable, recovery to both natural appearance and composition would be fairly rapid. Wild horse use would remain as an unnatural grazing impact within the WSA, most noticeably at water sources.

Sage Hen Hills WSA 1-146B - Wilderness condition with respect to visual aspects of unused vegetation would be enhanced to the casual observer in a short period of time with normal rainfall.

Spaulding WSA 1-139 - Though recovery of much of the area to a natural vegetative composition would take many years, a more "natural" appearance to the casual observer would occur in five or less growing seasons with normal rainfall. Lakebeds with dug pits would be slower to recover a natural appearance and potential natural community than the uplands. Unmodified lakebeds would recover more rapidly, especially where native vegetation still predominates. Ephemeral riparian zones would visually recover fairly quickly with regard to vegetative mass.

Guano Creek WSA 1-132 - The impacts to wilderness values would be the same as for Alternative 4.

Basque Hills WSA 2-84 - The proposed prescribed burns could restore a more natural component to this area.

4.10.2 Proposed Research Natural Areas/Areas of Critical Environmental Concern

Livestock grazing would be excluded in the Guano Creek PRNA under all alternatives. Removal of livestock would reduce the possibility of increased soil erosion, especially in the ash soil sites which are sensitive plant habitat. Litter cover would increase, which would also help reduce erosion. The increase of grasses, forbs, or low cover herbaceous vegetation would help stabilize existing soils. Removal of the threat of trampling, grazing, soil compaction or other inadvertent effects of livestock would greatly increase the possible survival of the fragile special status plants located on bare ash soils. Even though this segment of Guano Creek is in proper functioning condition, streambank stability would improve, increasing the natural potential distribution of perennial shore/aquatic plants. Channels would be able to naturally adjust with a decrease in channel width; silt loads could be lowered due to less disturbance, and sinuosity of the streams could reach potential.

In the Sink Lakes PRNA, the circular sink lakes fill the vernal pool sedge/rush element/cell and the surrounding upland area element/cell of sagebrush/Sandberg's bluegrass (Natural Heritage Advisory council 1993).

In this PRNA, no baseline inventories are available to quantitatively measure the effects of livestock grazing. Monitoring studies were initiated in the uplands in 1996, and monitoring will begin in the Sink Lakes when the high water subsides.

Alternative 1 - No Action (Implement the MFP)

In the Sink Lakes area, the implementation of the MFP does not contain sufficient safeguards for the plant communities for which the cells were nominated. If no wild fire occurs, the shrubs would continue to expand and the grass/forb diversity would probably decrease. When grazing effects are determined based on monitoring, management could be adjusted. Grazing every year, as has occurred in the past, would have an overall detrimental effect on the Sink Lakes PRNA.

The Hawk Mountain 1 and 2 PRNAs do not fit a particular element cell need, but they are good representations of sagebrush/bunch grass communities, especially big sagebrush and Thurber's needlegrass. When the sites were proposed, it was suggested that the sites be inventoried to see if they need to be protected. Grazing at present levels appears to have little negative effect. Hawk Mountain has a rest-rotation system for grazing at present. However, shrubs over the long-term would continue to expand at the expense of the grasses/forbs unless shrubs are actively reduced.

Alternative 2 - Eleven Pasture System

Sink Lakes grazing use would be rest-rotation with grazing early three out of five years, late season grazing one out of five years, and rest for one year. This rest-rotation would be better than current grazing practices, however, the benefits would depend on whether the lakes are full or low. Early season grazing in the upland areas would be better than late, because in late season grazing there is little opportunity for herbaceous forage to be preconditioned. Even in years of rest, the habitat diversity of the upland areas would deteriorate over time with shrub cover remaining high and herbaceous cover remaining low. If prescribed fire would burn these low sagebrush sites, a mosaic of shrubs and grasses might enhance the plant communities for which the area was proposed for RNA status. Early season grazing in really wet years would have little effect on the shore communities, however, in springs when the lakes are partially filled, livestock trampling and use of lake plants would cause the most damage and have the most negative effect. Late fall grazing, in most years would have little or no effect on the lakes as they would be dried out completely. In years when water is higher, the effects would be detrimental to the shoreline and lake plant communities due to trampling and foraging by livestock and wildlife.

At the Hawk Mountain PRNAs grazing would be on a four year rotation: resting every other year with early season grazing one year and late season grazing the third year. The construction of the proposed fences would concentrate higher numbers of livestock in a smaller area, and even though the use over four years would be less frequent, the impact would be more direct on the Hawk Mountain sites.

Alternative 3 - Current Management with Range Improvements

At the Sink Lakes PRNA, impacts would be the same as for Alternative 2. At the Hawk Mountain PRNAs grazing would occur every other year and be rested every other year. Rotation would be accomplished by herding. Grazing use on these PRNAs would be less than in Alternative 2 because of the pasture configuration. Other effects would be the same as for Alternative 2.

Alternative 4 - Jurisdictional Transfer

There would be no grazing of livestock in either the Sink Lakes or Guano Creek PRNAs. This alternative would allow for the most rapid recovery of the wetland plant species in and around the vernal lakes. No grazing of the upland areas would result in more residual cover. However, reaching the desired plant community diversity is dependent on finding an effective means of burning the sagebrush through prescription burns. The impacts to Hawk Mountain PRNA would be similar to Alternative 2.

Alternative 5 - No Grazing

The impacts in the Sink Lakes PRNA would be similar to Alternative 4. In the Hawk Mountain 1 and 2 PRNAs, there is currently a healthy mosaic of big sagebrush/bunchgrass and the grasses are nearly equal in dominance. If fire were reintroduced, nutrient cycling and habitat diversity would more closely approximate presettlement conditions. Removing livestock would increase litter cover and reduce soil erosion and compaction. Monitoring would have to continue to see if this condition continues without fire or other disturbance. As litter cover increases, there would be an increased probability of wildfire.

4.11 Cultural Resource Impacts

4.11.1 Historical

With the exception of Alternative 4, none of the alternatives would have any impact on historical resources. Under Alternative 4, considerable stabilization work on the Shirk Ranch structures would be necessary under Section 110 of the Historic Preservation Act. Livestock grazing in the immediate area of the complex could serve to reduce wildfire hazard to the wooden structures by removing vegetation (fine fuels) from around the buildings.

4.11.2 Traditional and Native American Religious

Alternative 1 - No Action (Implement the MFP)

There could be significant impacts to cultural resources if sites are not avoided. Proposed projects are summarized in Table 1 and shown on Map 2. These actions could have severe land disturbance impacts on the cultural resources of the area.

The areas which are identified for the construction of pipelines are known to have some large cultural sites present. The construction of the pipelines could have severe negative impacts to the cultural resources located there if the resources are not avoided. Mitigation through the Section 106 process would be required and would include Native American consultation. However, in some instances, the fencing of the spring source could benefit the cultural resources.

The reconstruction of waterholes and reservoirs should have little impact upon cultural resources as long as all work is restricted to the areas of previous disturbance. However, if the work goes outside of these areas, new impacts to cultural resource could occur. Reconstruction projects would require survey and section 106 evaluation and Native American consultation where inventories have not been previously completed.

The proposed burns could have negative or positive impacts on cultural resources and Traditional Use Areas. Since these areas are extremely large, the nature, number and extent of cultural resources in the burn areas is currently unknown to some extent. However, some large obsidian source areas are presently known which could be negatively impacted by fire. If a fire burns too hot (which is more likely under wildfire conditions than prescribed fire conditions), the obsidian may explode, damaging the cultural materials present and masking the work of stone tool makers. On the other hand, fire could improve the roots and plants which the Native Americans in the area are seeking to collect for their use. In each specific instance, a level of survey needs would have to be developed depending upon the geology of the area, the known sites, the results of Native American consultation, etc. From this, a survey and Section 106 review would be prepared to mitigate or eliminate the impacts to archaeological and Traditional Use Areas.

The implementation of the grazing system should have little or no effect upon archaeological sites. However, they could have an impact upon Traditional Use within the area for the collection of plants and other materials. Spring livestock grazing during the cultural plant growing season may negatively affect the growth of those plants, making them less useable by people. Consultation with the Native Americans and review through the Section 106 process would be needed for these changes. Any land disturbing activities related to these changes, such as moving proposed fences, waterholes, and pipelines, would need cultural surveys, Native American consultation, Section 106 review, and mitigation or elimination of the impacts prior to project implementation.

Alternative 2 - Eleven Pasture System

The proposed projects for this alternative are summarized in Tables 2 and 3, Appendices A and B, and Map 3. The areas of the proposed fences have not been surveyed for sites. A survey of the project locations and Native American consultation would be completed prior to implementaion. A Section 106 review of the impacts would be completed if sites are present in the construction zone of the project or if the project would have secondary impacts to the cultural resource. The impacts of other projects are the same as described under Alternative 1.

Alternative 3 - Current Management with Range Improvements

The proposed projects for this alternative are summarized in Tables 3 and 7, Appendices B and C, and Map 4. The impacts to archaeological properties and Traditional Use Areas would basically be the same as under Alternative 1. Only the number and location of actions would change. Projects would still need cultural surveys, Native American consultation, Section 106 review, and mitigation or elimination of the impacts to cultural resources and Traditional Uses prior to project implementation.

Alternative 4 - Jurisdictional Transfer

The proposed projects for this alternative are largely the same as for Alternative 2. The impacts to archaeological properties and Traditional Use areas would basically be the same as under Alternative 1. Only the number and location of the actions would change. Projects would still require a cultural survey, Native American consultation, Section 106 review, and mitigation or elimination of the impacts to cultural resources and Traditional Uses prior to project implementation.

The transfer of some lands to USFWS and restriction of grazing on other BLM-administered lands in the Jack Lake Riparian pasture (approximately 17,070 acres) would leave cultural resources on those areas undisturbed by livestock. On the Shirk Ranch, grazing would occur. If numbers of stock are increased, fences are built, or water management projects are constructed, these could have a negative impact on cultural resources potentially present. Before any land disturbing activities take place, a survey for sites, site evaluation, completion of the section 196 process and consultation with tribal groups would take place. If impacted sites can not be avoided, mitigation would be appropriate.

Alternative 5 - No Grazing

Only the prescribed burn areas would need cultural surveys. Native American consultation would still be required for management of Traditional Use Area. The impacts of livestock trampling on sites, the removal of vegetation on sites, and erosion of sites caused by livestock would no longer occur. This would be a benefit to the cultural sites.

4.12 Socioeconomic Impacts

4.12.1 Population/Demographics

None of the alternatives would measurably affect population or demographics.

4.12.2 Local Economy/Business Climate

Only economic impacts to Lake County are addressed in this discussion as the only effect on Harney County would be the loss of their share of the grazing receipts (12.5% of the grazing fee collected) under Alternative 5. Table 15, Appendix E, shows the comparative direct costs of implementing each alternative. Listed in descending order of cost, the comparison is Alternative 1, 2 and 4, 3, and 5.

Alternative 1 - No Action (Implement the MFP)

Generally, there would be no significant change in the affected ranching operations or economic values as a result of implementing this alternative. There would be a short-term increase in employment as a result of implementing the proposed projects. There would be an increase in annual maintenance costs for these projects (for fences $1.54/mile; Turner et al., 1996).

Alternative 2 - Eleven Pasture System

These impacts would be about the same as for Alternative 1. There are fewer projects proposed, so short-term employment would be less. The corresponding cost for annual maintenance would also be lower.

Alternative 3 - Current Management with Range Improvements

These impacts would be about the same as for Alternative 2. There are fewer projects proposed, so short-term employment would be less than for Alternatives 1 or 2. The corresponding cost for annual maintenance would also be lower. However, additional herding would be done, so long term employment (two to five employees for six to eight months each year) would be greater.

Alternative 4 - Jurisdictional Transfer

These impacts would be about the same as for Alternative 2, with some of the annual project maintenance costs being replaced by irrigation costs for the Shirk Ranch.

Alternative 5 - No Grazing

This alternative would negatively affect the income levels of the individuals involved in the consortium which owns the MC Ranch. All members of the grazing association would have to reduce herd numbers or lease other pastureland at a significantly higher cost. Some of these costs would be offset by not needing to maintain projects or hire riders to operate on the Beaty Butte allotment.

The Lakeview Grazing Management EIS (BLM, 1982a) stated an assumed value of $45 per AUM of active preference (page 3-50). While the Bureau does not recognize an official value for permits, preference attached to base property does add a value to the property when it is sold. This value is determined by the buyer and seller. The estimated $45 per AUM value is still accurate for permit value in 1996 (Willie Riggs, Lake County Extension Agent, personal communication). There are currently 26,121 AUMS of active preference in the allotment. This would equate to a loss of $1.175 million to the value of the two ranches.

If all the cattle on Beaty Butte allotment were displaced from Lake County, there would be about a 4% (1,800 head out of 43,000 in Lake County) loss of annual cattle sales in the county. This would be a loss of about 10% if the Beaty Butte allotment was stocked to the full permitted numbers (4,020 cows).

Table 16, Appendix E, summarizes the range of economic impacts to the county if all cattle were removed from the Beaty Butte allotment. The table gives a range of impacts depending on how many of the cows removed from Beaty Butte would actually be displaced from the county. An economic multiplier (OSO, 1995) is also used in the table to calculate the total impact a decline in cattle sales would have on the county economy. Using the average livestock number (1,925 cows for 1993-1996) on the allotment, the annual economic loss to the county would range from $312,593 to $1,[illegible]0,370. The high number assumes all the cattle displaced from Beaty Butte allotment would leave the county, which is quite likely because there is very little unused grazing land available in Lake County. If the allotment were stocked at the permitted level (4020 cows) the annual economic loss would range from $652,790 to 2.6 million dollars annually (Willie Riggs, Lake County Extension Agent, personal communication).

There would be some short-term employment involved in removing fences within the allotment, but reduced long-term employment as maintenance and herding requirements would be eliminated.

4.13 Recreation and Visual Resource Impacts

Overall, the proposed projects would not have significant, long-term impacts to recreation resources. Short to mid-term impacts would result from the proposed prescribed fires. However, recovery and enhancement would be the long-term objective of these projects for overall health and appearance of the public lands.

Alternative 1 - No Action (Implement the MFP)

While most projects in the MFP were evaluated to some extent in the Lakeview Grazing Management EIS (BLM, 1982a), there would be minor visual impacts affecting recreation, as well as visual resource values. Waterholes and fences would place new, man-made objects into the environment. However, over the large expanse of the allotment, these projects would have little impact and would be allowable within the existing VRM classes. As noted previously, some projects would not meet criteria for placement in WSA's. The increased amount of fencing would create additional barriers for hunters or other recreationists who use off-road vehicles.

Alternative 2 - Eleven Pasture System

With respect to recreation, fencing would most likely affect travel in the allotment; therefore, wherever fences cross principle roads, cattleguards would be needed to facilitate recreation access, especially for persons with disabilities. Principal roads are by definition either major routes or roads that go to key recreation points such as Spaulding Reservoir. If adequately mitigated, recreational access would not be significantly impacted.

Visual resources would be most impacted in the short-term by prescribed fires, due to changes in color, line, form, and texture of the landscape. After recovery, the replacement of the brush component with grasses and forbs would still represent a visual change, but to a more natural mosaic of vegetation across the landscape. Structural features would only have minor impacts; the most critical would be the placement of fences so as not to create striking contrast on the land either by the fence itself, or by grazing induced contrasts in the vegetation.

Alternative 3 - Current Management with Range Improvements

The impacts would be the same as for Alternative 2.

Alternative 4 - Jurisdictional Transfer

Impacts would generally be the same as for Alternative 2, except in the area of Guano Creek (Guano CreekJack Lake pastures), there would be the potential for limitation of pronghorn antelope hunting on the exchanged lands below Hart Mountain NAR if roads are closed, or if more restrictive hunting rules are formed as on the refuge in the future. Visual enhancements in this area would occur due to improvement in native rangeland conditions following livestock removal, and possible inclusion of prescribed fire in the area.

Alternative 5 - No Grazing

Overall, primitive or dispersed recreation opportunities would improve with the removal of cattle from fishing areas and primary hunting camp spots. If big game populations increase due to increased forage availability, hunting opportunities would be enhanced. Visual resource elements would have obvious, short-term changes in color, form, texture as a result of prescribed burns, but over the long-term, these values would be enhanced as a native vegetation mosaic pattern develops.

4.15 Secondary, Indirect, and Cumulative Impacts

Because the BLM manages the majority of the lands within the allotment boundary there are few other management activities which are anticipated within the allotment that would cause secondary, indirect or cumulative impacts that have not already been addressed in other parts of Chapter 4. Across the broader landscape, management activities occur on Hart Mountain NAR, Sheldon NWR, Burns and Winnemucca Districts (BLM), other parts of the Lakeview Resource Area, State and private lands which could be considered to be cumulative. The cumulative impacts of the use of prescribed fire to achieve vegetation management objectives across BLM-administered lands in thirteen western states has been previously analyzed, is incorporated by reference and will not be repeated here (BLM, 1991b). In addition, the cumulative impacts of livestock grazing programs and the use of prescribed fire within the Columbia River Basin and portions of the Northern Great Basin, including the Beaty Butte allotment, have been recently analyzed as part of the Interior Columbia Basin Ecosystem Management Project Draft EIS (Forest Service and BLM, 1997. This analysis is incorporated by reference and will not be repeated here.

4.16 Irreversible/Irretrievable Impacts

The dollars, energy and resources invested in implementing the five alternatives, and perhaps the economic loss of income to Lake County that would occur under Alternative 5, comprise the only irreversible or irretrievable impacts associated with implementation of an AMP.

Chapter 5
Consultation and Public Input Opportunities

5.1 Public and Inter-Agency Coordination

A combined scoping letter and field tour invitation was mailed out on June 2, 1995, to 87 agencies, groups, tribal governments, and individuals on the BLM's mailing list. This letter described the need to prepare the AMP, requested input on issues/concerns which needed to be addressed, and invited all interested parties to participate in a tour of the allotment. The field tour was also announced in local newspapers. A total of five comment letters were received. A total of 29 people, including representatives of other agencies, local citizens, environmental groups, permittees, and BLM employees, attended the field tour on June 21, 1995.

The BLM invited all on the scoping/field tour mailing list to participate in an informal working group process. This invitation was also announced via news releases in area newspapers. The purpose of the working group process was to provide more opportunity for those interested in the management of the area to have input during the AMP development process. A total of seven working group meetings were held between July 1995, and April 1996. Meeting attendance varied widely. Meetings focused on obtaining input that, in conjunction with the scoping comments, assisted in developing management goals, objectives, alternatives, and project proposals for the area. All meetings were open to the public and were generally announced via news releases. Copies of meeting notes, agendas, handouts, etc. were routinely sent to those participating in the working group process, tribal governments, and others wishing to be kept informed of the process. During the process an additional six comment letters were received. Copies of all meeting notes, agendas, and handouts, and comment letters are contained in the project file and are available for review upon request.

In November 1996, it was decided that an EIS was a more appropriate NEPA document for the level of interest. Scoping was reopened for a 30 day period [illegible] announced via a Federal Register Notice (dated November 20, 1996) and a letter to all the working group mailing list (dated November 25, 1996). An additional ten letters, postcards, or telephone requests were received, six containing comments and all desiring to be added to the EIS mailing list. During this second public scoping period and beyond, the BLM received an additional 23 letters, postcards, telephone, and e-mail comments. Six of these merely requested additional information and/or to be placed on the draft AMP/EIS mailing list. Twelve letters received were of the form letter variety which listed three main issues of concern. All comments/concerns were categorized and addressed as described in Public Comments section. Several of the letters received warranted individual response letters.

5.2 Native American Consultation

The consultation process as described by law and regulation requires the federal agency to make concerted efforts to determine if Native Americans have interests and concerns within a specific area. This involves making initial contact with tribal groups and individuals at the onset of the proposed project. This can be done by letter or direct contact. This is followed by contact by phone or in person to describe and discuss the proposed project. If appropriate presentations may be made to the full tribal council or interested parties by the agency. Efforts are always made to identify specific individuals who have interest in the area of the project to gather information. If concerns or needs are expressed, these are addressed in the environmental document. Care must always be taken to ensure that proprietary information about sites of cultural concern is protected while at the same time protecting the values which have been identified.

Letters of inquiry and direct, face-to-face meetings with the Klamath Tribes, and the Burns, Fort Bidwell, and Fort McDermitt Northern Paiute Tribes have taken place. Representatives of the Fort Bidwell Tribe have taken part in two tours of the area. Consultation continues to take place. As the AMP is implemented, further consultation on specific projects will take place.

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5.3 List of Recipients

The following agencies, groups, tribal governments, and individuals were sent a copy of this AMP/Draft EIS for review:

Federal Agencies/Government Representatives

Advisory Council on Historic Preservation
Dianne Baier, Environment Canada
Gordon Bentley, BLM - Burns District
Chief, Environmental Policy & Program Division,
Minerals Management Service
Ron Cole, U.S. Fish and Wildlife Service
Gary Cooper, BLM - Vale District
Division of Environmental Compliance, National Park Service
Director, Department of the Interior, BLM
Department of Energy, Office of Environmental Policy
Environmental Affairs Program, U.S. Geological Survey
Office of Civil Engineering, HQ USAF/CEVP,
Directorate of Environmental Quality
Chief, Division Env. Contaminants, U.S. Fish and Wildlife Service
Air Force Penatagon, Office of Deputy A/S of USAF
Russ Peterson, U.S. Fish and Wildlife Service (ES)
Bill Pieratt, Ochoco National Forest
Environmental Program Coordinator, U.S. EPA, Region 10
Bureau of Reclamation, Denver Federal Center, Box 25007
Forest Service, Office of Environmental Coordination
Gordon Smith, U.S. Senator
Bob Smith, House of Representatives
Chief, Planning Division, South Pacific Division, U.S. Army Corps of Engineers
Senator Ron Wyden, U.S. Senator

State Governments

Marc Liverman, Oregon Dept. of Fish and Wildlife
A.K. Majors, Oregon Division of State Lands
Agency Receptionist, Department of Environmental Quality
Dr. Robert Meinke, Oregon Department of Agriculture
State Historic Preservation Officer
John Kitzhaber, Governor of Oregon
Larry Conn, Oregon Dept. of Fish and Wildlife
Denny Jones, State Representative
Eugene Timms, State Senator

Local Governments/Libraries

Harney County Library
Harney County Commissioners
Klamath County Library
Lake County Commissioners
Lake County Library
Modoc County Board of Supervisors
Willie Riggs, Lake County Extension Service

Tribal Governments/Contacts

Tribal Chairman, Burns Paiute Tribe
Tribal Chairman, Confederated Tribes of the Warm Springs Reservation
Tribal Chairman, Ft Bidwell Indian Community Council
Tribal Chairman, The Klamath Tribes
Tribal Chairman, Ft. McDermitt Paiute
Clarence DeGarmo, Ft Bidwell Indian Community Council
Linda Reed-Jerofke, Burns Paiute Tribe

General Public/Groups

Jim Davis
Oregon Wildlife Federation
Sierra Club, Klamath Group
The Nature Conservancy
The Wilderness Society
Izaak Walton League of America
David Albersworth, National Wildlife Federation
Bill Arthur, Sierra Club, Northwest Office
Rex Ash
David Bishop
Kalman Brauner
Deanna Calef
Danny Cron
Katie Fite, Committee for Idaho's High Desert
Donald Fontenot
Bob Friemark, The Wilderness Society
H. Paul Friesema, Northwestern University
S.D. Garrett, M.D., Native Plant Society of Oregon
John Geddie
Mike Getty, Hunters for Conservation
Tonya Graham
Thomas Gritzka, M.D., Occupational Orthopaedics Northwest
Don Hamblin
Rob Handy
Tom and Pat Harris, Pacific NW 4-Wheel Drive Association
Bruce Hayse, M.D.
Doug Heiken, Oregon Natural Resources Council
Allan Kania, Editor, Wild Horse & Burro Diary
Dave & Bobbie Koons
John Lane, MC Beaty Butte Grazing Assoc.
Orval Layton
Bill Marlett, Oregon Natural Desert Association
Jim Mosher, Izaak Walton League of America
Jeremiah O'Leary
Lawrence Pagen
Wade Patterson
Tom Pringle

Ron Rathbone
Elaine Rees, Oregon Natural Desert Association
Mike Sawyer
Fred Sawyer
Jean Schadler, MC Beaty Butte Grazing Assoc.
Jason Seivers
Len Shrewsbury, Southeastern Oregon RAC
Edward Stabb, Crump Ranch
Myron Steward, MC Beaty Butte Grazing Assoc.
Paula Surmann, Sierra Club, Oregon Chapter
Karen Sussman, ISPMB
Gordon Swan
Rachel Thomas
Frank Vaughn
Kerry Way

Chapter 6
List of Preparers

The list below includes the primary members of the Inter-Disciplinary (ID) Team who were responsible for the preparation of this document.

Name	Title	Area of Expertise
Bill Cannon	Archeologist	Cultural Resources/Native American Concerns
Walt Devaurs	Widlife Biologist	Wetlands/Wildlife
Dick Mayberry	Supervisory Range Conservationist	Working Group Coordinator
Les Boothe	Range Conservationist	Range Resources
Doug Troutman	Recreation Specialist	Recreation/Special Management Areas/ Visual Resources
Paul Whitman	Planning/Environmental Coordinator	Document Preparation/Quality Control
Lucile Housley	Botanist	Vegetation/Special Status Plants
Kritstin Bail	Hydrologist	Hydrology and Soils
Vern Stoffleth	Wildlife Biologist	Terrestrial Wildlife
Alan Munhall	Fishery Biologist	Fisheries/Water Quality/Hydrology
Scott Florence	Lakeview Resource Area Manager	Document Review
Ron Cole	Sheldon-Hart National Wildlife Refuge Complex Deputy Project Leader	Document Review/Working Group Participant
Mike Nunn	Sheldon-Hart National Wildlife Refuge Complex Project Leader	Document Review
Susan Bond	Visual Information Specialist	Document Production

Appendix A
Proposed Project List for Alternative 2

The proposed fences will form three pastures and allow for a rest-rotation system.

a) Eleven mile fence from the Spaulding Pasture running east to an unnamed butte north of Shallow Lake.

b) Nineteen mile fence running from southern boundary at Highway 140 to Buckaroo Pass.

The following projects (shown on Map 3) are proposed to meet vegetation community objectives, improve water distribution and protect spring areas, and to manage livestock distribution and movement within the allotment.

d) Fence out Spaulding Reservoir and provide pipeline to water trough away from the reservoir. About 3 miles of pipeline would be needed.

e) Fence out South Corral Spring and provide pipeline to trough away from the spring. No more than 1/2 mile of pipeline would be needed.

f) Run pipeline north from Buena Vista spring to get the cows out of the canyon around Buena Vista spring. About 1/2 mile of pipe would be needed.

g) Run pipeline from Twin Spring to the west to relieve pressure around the spring exclosure. About 1/2 mile of pipe at most would be needed.

h) Run a pipeline from DL Spring to north to relieve pressure around the spring exclosure. About 1/2 mile of pipe would be needed.

i) Develop a new dirt tank in the drainage about a mile east of North Highland Spring.

j) Reconstruct Rock Reservoir, which is about half way between Dixon Waterhole and South Corral Spring.

k) Reconstruct two dirt tanks in the northwest corner of the allotment. These tanks are part of the Guano Slough system and are located in sections 6 and 8.

l) Develop a water source outside of Sagehen Canyon, either by constructing a pipeline or fencing of the creek. The creek in the canyon could be excluded from grazing except for a watergap on private land where the horses in the camp would water. Reconstruct or add to the existing check dams in the Sagehen drainage to control erosion.

m) Prescribed burn in Hawk Valley seeding followed by reseeding of crested wheatgrass if necessary to improve the production and vigor of the crested wheatgrass seeding. The burn area is about 6,500 acres. The original Hawk Valley burn and crested wheatgrass seeding was conducted to create additional forage and an alternative livestock grazing area. Prior to the original burn there was a mixture of native bunchgrasses and shrubs. Since the area was seeded, shrubs have regained dominance, though there is a significant amount of native bunchgrasses that are also out-competing the crested wheatgrass. If the area is burned, existing native bunchgrasses could germinate on their own. However, this alternative proposes to take grazing pressure off other parts of the allotment during the spring and early summer and reseeding is recommended. Crested wheatgrass would not be reseeded unless state guidelines are followed and BLM criteria for planting non-natives are met.

n) Install two cattle guards along the east and north boundary of Hawk Valley seeding to keep cattle from getting out into the Burns District and reduce the movement of wild horses between the Burns and Lakeview Districts.

o) Erosion control structures need to be rebuilt or increased in West Gulch on the south side of Beaty Butte. There are several check dams in the gulch ad these may need some repair and some new dams may be necessary.

p) Develop a new dirt tank in the drainage on the south side of the main road from Sagehen Camp to Acty Camp. This dirt tank would be about a mile southeast of Dixon waterhole and about 1 mile west of West Dixon waterhole (T.41S., R.29E. Section 3 NESW). The purpose would be to provide an additional waterhole in the new Southeast Pasture.

q) Build exclosure around the Potholes from the road crossing north to the private land boundary (about 1/2 mile). This project is in Section 7, T.40S., R.29E. A water gap would be provided for livestock water.

r) Prescribed burns are listed below, and their location is shown on Map 2. The proposed prescribed burn sites were selected based on the following criteria: 1) Sagebrush provides 60 percent of the annual vegetation production as estimated from transect data from Ecological Site Inventory, 2) The understory of the sagebrush contains sufficient desirable grass species to revegetate the area and meet objectives, 3) Ability to contain the fire based on access to roads and natural topography. All proposed prescribed burns are subject to change or elimination based on field inspection to determine feasibility and suitability. Areas may be excluded from burning because of the presence of rare plants, cultural or historical values, wildlife values such as sage grouse leks and/or complications with private land.

1. Long Grave Butte Burn (T.37S., R.28E. Section 4-10, 15-18, 20-22, 27, 28). Approximately 5,500 acres north of Lone Grave Butte, the east boundary of the burn area is the main Beaty Butte Road #6176. The dominant vegetation is big sagebrush with either Thurber's needlegrass or bluebunch wheatgrass as the dominant understory grass. There are some areas of low sagebrush mixed in.

2. Mahogany Mountain Burn (T.37S., R.29E. Section 20,22,28-32). Approximately 2,200 acres in size east of Rock Springs camp and west of Sunrise Spring and around Dropoff waterhole. The dominant vegetation is big sagebrush with either Idaho fescue or blue bunch wheatgrass in the understory. There is also low sagebrush with the same grasses in the understory.

3. Mud Hole Spring burn (T.37S., R.28E. Section 35, 36; T.37S., R.29E. Section 31; T.37S., R.28E. Section 1,2,11-14; T.38S., R.29E. Section 4-9,17,18). The burn is approximately 7,000 acres. The burn is bordered on the north by the road which runs from Rock Springs camp past Mud Hole springs and down to Lick spring. The burn is bordered on the south and east by a low rim and Reed spring. On the west side the burn may extend out to the Beaty Butte Road. The dominant vegetation is a mixture of low sagebrush and big sagebrush with an understory that is dominated by Idaho fescue. All the other common native perennial grasses are also found in the area in varying amounts.

4. Rye Grass Valley Burn (T.38S., R.29E. Section 10-12,13-15,22-26; T.38S., R.30E. Section 18,19,30). The approximate size is 6,000 acres. The dominant shrub is big sagebrush with Sandberg's bluegrass and bluebunch wheatgrass being the most dominant understory grasses. Thurber's needlegrass is common and is the dominant grass in some small areas. There are also areas within the burn which may lack sufficient fuel to carry a fire.

5. Wilson Spring Burn (T.37S., R.29E. Section 36; T.37S., R.30E. Section 31,32; T.38S., R.29E. Section 1; T.38S., R.30E. Section 5-9,16,17). The burn is approximately 4,200 acres. The burn is southeast of Wilson Spring and is bordered on the east by the main Beaty Butte Road that rns north-south. The burn is bordered on the north and the south by road or by jeep trail for most of the way. The dominant vegetation is big sagebrush with either Sandberg's bluegrass or bottlebrush squirreltail as the dominant understory grass. There are areas of cheatgrass in the burn and these will have to be closely examined in the field.

6. County Line Burn (T.38S., R.28E. Section 25,35,36; T.38S., R.29E. Section 30,31; T.39S., R.28E. Section 1,2,12; T.39S., R.29E. Section 5-7). The burn is approximately 4,000 acres. The burn straddles the Lake-Harney county line extending about 1 mile east and west from the county line. The west boundary of the burn is Guano Rim about 1.5 miles east of the Spaulding Ranch. The south boundary is about 1 mile north of Spaulding reservoir. The north boundary is about 1 mile south of Buckaroo Pass. The dominant vegetation is a mixture of big sage and low sage with Sandberg s bluegrass being the dominant understory grass. Bluebunch wheatgrass and Idaho fescue are common in patches.

7. Rocky Canyon burn (T.39S., R.28E. Section 11-15,22-26,35,36). The burn is approximately 4,500 acres. The southern boundary of the burn would be Rocky Canyon with the west border being Guano Rim and the north and east borders would be the rim above Sagehen Canyon. Big sage is the dominant vegetation but about 25 percent of the area is dominated by low sage. Thurber s needlegrass is the dominant understory grass with Sandberg s bluegrass also occurring often. Bluebunch wheatgrass is found throughout the site.

8. Guano Rim Burn (T.39S., R.38E. Section 27,28,33,34; T.40S., R.28E. Section 4,8,9,17,18). The approximate acreage in the burn is 1,900 acres. The dominant vegetation is about 60 percent big sage with bluegrass understory and 40 percent low sage with bottlebrush squirreltail understory. This burn, in addition to reducing the amount of sage and improving vegetation diversity, would also increase the amount of grass to improve big horn sheep habitat.

9. Stallion Waterhole Burn (T.41S., R.30E. Section 1-4,7-12,14-18,20-23). The burn is approximately 8,700 acres in size. The burn area is north of Stallion waterhole along the Nevada border in the south and along the east border is Hawksie Walksie. The west border is a two track road and the north border is a low rim. The dominant vegetation is big sagebrush with an understory of either Thurber s needlegrass, Sandberg s bluegrass or bluebunch wheatgrass.

10. Hawk Mountain RNA Burn (T.40S., R.31E. Section 29-32). The approximate size of the burn is 300 acres. The burn area is in the west edge of the Hawk Mountain RNA which is about 1 mile northeast of Hawksie Walksie and 2 miles south of Hawks Valley. The dominant vegetation is big sage and bluebunch wheatgrass. The reason for this burn is to determine if the ecological condition of this small part of the RNA can be improved through burning to match the rest of the RNA.

11. Butcher Flat Burn (T.38S., R.30E. Section 25,35,36; T.38S., R.31E. Section 30,31; T.39S., R.30E. Section 1-3,10-16,21-27; T.39S., R.31E. Section 5-7,18-20,30). The approximate size of the burn is 12,700 acres. The west border of the burn area is the Beaty Butte Road and edge of the burn parallels the road where it divides and goes north to Shallow Lake and goes southeast to Acty camp. The north border is the middle of Butcher Flat where the amount of fuel has declined to a level that would probably not support a fire. The dominant vegetation is big sage with a bottlebrush squirreltail understory. The southern half of the burn area is in late seral stage and has significant amounts of Thurber s needlegrass while the northern half of the burn area is in a mid-seral stage with lesser amounts of grass in the understory.

12. Fish Fin Rim Burn (T.36S., R.30E. Section 26,27,32-36; T.37S., R.30E. Section 1-6, 8-11. The approximate size of the burn is 5,500 acres. The area is located on a bench top directly west of Fish Fin Rim. The entire boundary of the burn is the rim for this bench top. The dominant vegetation is big sage with either Thurber s needlegrass or bottlebrush squirreltail as the dominant understory.

13. East Gulch Burn (T.36S., R.30E. Section 16,17,19-21,28-31; T.36S., R.29E. Section 36; T.37S., R.29E. Section 1,2,11,12). The approximate size of the burn is 4,700 acres. The burn is located between the East Gulch Road on the west border and the main Beaty Butte on the east border. The burn parallels the East Gulch Road along the east side of the road up to the junction with the old military road. The dominant vegetation is big sage and the understory changes from east to west with a bluebunch wheatgrass understory on the western third of the burn; a needlegrass understory in the middle of the burn area; and a bottlebrush squirreltail understory on the east third.

14. Beaty Butte Burn (T.36S., R.29E. Section 13, 15, 20-28,34,35; T.37S., R.29E. Section 2,3). The approximate size is 5,700 acres. The burn is located between the East Gulch Road on the southeast and the road around Beaty Butte on the northwest edge of the burn. The road between DL spring and Rattlesnake Butte form the northern border of the burn. The dominant vegetation is big sage with a little low sage in places. The dominant understory grasses vary, with Thurber's needlegrass and bottlebrush squirreltail being the most common. Sandberg's bluegrass and bluebunch wheatgrass are also found as dominant grasses in some places.

15. Old Military Road Burn (T.36S., R.30E. Section 8,9,17,18,19,30). The approximate size is about 2,000 acres. The burn is located north of the East Gulch Road and south of the Old Military road. The east edge is where these two roads join. The western border is the main Beaty Butte Road. The dominant vegetation is big sagebrush with bottlebrush squirreltail.

16. Surveyor's Lake Burn (T.37S., R.29E. Section 25; T.37S., R.30E., Section 6,7,15-21,29-31). The approximate size of the burn is 5,000 acres. The burn is located west of Surveyor's Lake with the northern boundary being the Shallow Lake Road and the road to Big Dog waterhole. The burn is bordered on the west by the road from Wilson Spring and on the south by the Wilson Spring road and the Shallow Lake road. The eastern boundary is a small drainage that runs from the Big Dog waterhole road south to Surveyor's Lake. The dominant vegetation is big sagebrush with about half of the burn area having a bluebunch wheatgrass understory. The understory in the rest of the burn area is Sandberg's bluegrass, Thurber's needlegrass or bottlebrush squirreltail.

Appendix B
Proposed Westside Project List for Alternatives 2, 3, and 4

A) About 5 miles of fence would be needed along the road south of Guano Creek to divide the Jack Lake pasture into two pastures.

B) About 4 miles of fence across the middle of the Jack Creek pasture would create the two pastures needed.

C) Develop water source at the spring or in the playa in Clove pasture and pipe water from the west side of the pasture to the east side.

Appendix C
Proposed Eastside Project List for Alternative 3

With the exception of Project A, most of the projects listed in Alternative 2 are also proposed in Alternative 3.

The proposed fences will form two pastures.

a) Nineteen mile fence running from southern boundary at Highway 140 to Buckaroo Pass.

The following projects (shown on Map 4) are proposed to meet vegetation community objectives, improve water distribution and protect spring areas, and to manage livestock distribution and movement within the allotment.

b) Fence out Spaulding Reservoir and provide pipeline to water trough away from the reservoir. About 3 miles of pipeline would be needed.

c) Fence out South Corral Spring and provide pipeline to trough away from the spring. No more than 1/2 mile of pipeline would be needed.

d) Run pipeline north from Buena Vista spring to get the cows out of the canyon around Buena Vista spring. About 1/2 mile of pipe would be needed.

e) Run pipeline from Twin Spring to the west to relieve pressure around the spring exclosure. About 1/2 mile of pipe at most would be needed.

f) Run a pipeline from DL Spring to north to relieve pressure around the spring exclosure. About 1/2 mile of pipe would be needed.

g) Develop a new dirt tank in the drainage about a mile east of North Highland Spring.

h) Reconstruct Rock Reservoir, which is about half way between Dixon Waterhole and South Corral Spring.

i) Reconstruct two dirt tanks in the northwest corner of the allotment. These tanks are part of the Guano Slough system and are located in sections 6 and 8.

j) Develop a water source outside of Sagehen Canyon, either by constructing a pipeline or fencing of the creek. The creek in the canyon could be excluded from grazing except for a watergap on private land where the horses in the camp would water. Reconstruct or add to the existing check dams in the Sagehen drainage to control erosion.

k) Prescribed burn in Hawk Valley seeding followed by reseeding of crested wheatgrass if necessary to improve the production and vigor of the crested wheatgrass seeding. The burn area is about 6,500 acres. The original Hawk Valley burn and crested wheatgrass seeding was conducted to create additional forage and an alternative livestock grazing area. Prior to the original burn there was a mixture of native bunchgrasses and shrubs. Since the area was seeded, shrubs have regained dominance, though there is a significant amount of native bunchgrasses that are also out-competing the crested wheatgrass. If the area is burned, existing native bunchgrasses could germinate on their own. However, this alternative proposes to take grazing pressure off other parts of the allotment during the spring and early summer and reseeding is recommended. Crested wheatgrass would not be reseeded unless state guidelines are followed and BLM criteria for planting non-natives are met.

l) Install two cattle guards along the east and north boundary of Hawk Valley seeding to keep cattle from getting out into the Burns District and reduce the movement of wild horses between the Burns and Lakeview Districts.

m) Erosion control structures need to be rebuilt or increased in West Gulch on the south side of Beaty Butte. There are several check dams in the gulch ad these may need some repair and some new dams may be necessary.

n) Develop a new dirt tank in the drainage on the south side of the main road from Sagehen Camp to Acty Camp. This dirt tank would be about a mile southeast of Dixon waterhole and about 1 mile west of West Dixon waterhole (T.41S., R.29E. Section 3 NESW). The purpose would be to provide an additional waterhole in the new Southeast Pasture.

o) Build exclosure around the Potholes from the road crossing north to the private land boundary (about 1/2 mile). This project is in Section 7, T.40S., R.29E. A water gap would be provided for livestock water.

p) Prescribed burns are listed below, and their location is shown on Map 4. The proposed prescribed burn sites were selected based on the following criteria: 1) Sagebrush provides 60 percent of the annual vegetation production as estimated from transect data from Ecological Site Inventory, 2) The understory of the sagebrush contains sufficient desirable grass species to revegetate the area and meet objectives, 3) Ability to contain the fire based on access to roads and natural topography. All proposed prescribed burns are subject to change or elimination based on field inspection to determine feasibility and suitability. Areas may be excluded from burning because of the presence of rare plants, cultural or historical values, wildlife values such as sage grouse leks and/or complications with private land.

1. Long Grave Butte Burn (T.37S., R.28E. Section 4-10, 15-18, 20-22, 27, 28). Approximately 5,500 acres north of Lone Grave Butte, the east boundary of the burn area is the main Beaty Butte Road #6176. The dominant vegetation is big sagebrush with either Thurber's needlegrass or bluebunch wheatgrass as the dominant understory grass. There are some areas of low sagebrush mixed in.

2. Mahogany Mountain Burn (T.37S., R.29E. Section 20-22,28-32). Approximately 2,200 acres in size east of Rock Springs camp and west of Sunrise Spring and around Dropoff waterhole. The dominant vegetation is big sagebrush with either Idaho fescue or blue bunch wheatgrass in the understory. There is also low sagebrush with the same grasses in the understory.

3. Mud Hole Spring burn (T.37S., R.28E. Section 35, 36; T.37S., R.29E. Section 31; T.37S., R.28E. Section 1,2,11-14; T.38S., R.29E. Section 4-9,17,18). The burn is approximately 7,000 acres. The burn is bordered on the north by the road which runs from Rock Springs camp past Mud Hole springs and down to Lick spring. The burn is bordered on the south and east by a low rim and Reed spring. On the west side the burn may extend out to the Beaty Butte Road. The dominant vegetation is a mixture of low sagebrush and big sagebrush with an understory that is dominated by Idaho fescue. All the other common native perennial grasses are also found in the area in varying amounts.

4. Rye Grass Valley Burn (T.38S., R.29E. Section 10-12,13-15,22-26; T.38S., R.30E. Section 18,19,30). The approximate size is 6,000 acres. The dominant shrub is big sagebrush with Sandberg's bluegrass and bluebunch wheatgrass being the most dominant understory grasses. Thurber's needlegrass is common and is the dominant grass in some small areas. There are also areas within the burn which may lack sufficient fuel to carry a fire.

5. Wilson Spring Burn (T.37S., R.29E. Section 36; T.37S., R.30E. Section 31,32; T.38S., R.29E. Section 1; T.38S., R.30E. Section 5-9,16,17). The burn is approximately 4,200 acres. The burn is southeast of Wilson Spring and is bordered on the east by the main Beaty Butte Road that runs north-south. The burn is bordered on the north and the south by road or by jeep trail for most of the way. The dominant vegetation is big sagebrush with either Sandberg's bluegrass or bottlebrush squirreltail as the dominant understory grass. There are areas of cheatgrass in the burn and these will have to be closely examined in the field.

6. County Line Burn (T.38S., R.28E. Section 25,35,36; T.38S., R.29E. Section 30,31; T.39S., R.28E. Section 1,2,12; T.39S., R.29E. Section 5-7). The burn is approximately 4,000 acres. The burn straddles the Lake-Harney county line extending about 1 mile east and west from the county line. The west boundary of the burn is Guano Rim about 1.5 miles east of the Spaulding Ranch. The south boundary is about 1 mile north of Spaulding reservoir. The north boundary is about 1 mile south of Buckaroo Pass. The dominant vegetation is a mixture of big sage and low sage with Sandberg s bluegrass being the dominant understory grass. Bluebunch wheatgrass and Idaho fescue are common in patches.

7. Rocky Canyon burn (T.39S., R.28E. Section 11-15,22-26,35,36). The burn is approximately 4,500 acres. The southern boundary of the burn would be Rocky Canyon with the west border being Guano Rim and the north and east borders would be the rim above Sagehen Canyon. Big sage is the dominant vegetation but about 25 percent of the area is dominated by low sage. Thurber s needlegrass is the dominant understory grass with Sandberg s bluegrass also occurring often. Bluebunch wheatgrass is found throughout the site.

8. Guano Rim Burn (T.39S., R.38E. Section 27,28,33,34; T.40S., R.28E. Section 4,8,9,17,18). The approximate acreage in the burn is 1,900 acres. The dominant vegetation is about 60 percent big sage with bluegrass understory and 40 percent low sage with bottlebrush squirreltail understory. This burn, in addition to reducing the amount of sage and improving vegetation diversity, would also increase the amount of grass to improve big horn sheep habitat.

9. Stallion Waterhole Burn (T.41S., R.30E. Section 1-4,7-12,14-18,20-23). The burn is approximately 8,700 acres in size. The burn area is north of Stallion waterhole along the Nevada border in the south and along the east border is Hawksie Walksie. The west border is a two track road and the north border is a low rim. The dominant vegetation is big sagebrush with an understory of either Thurber s needlegrass, Sandberg s bluegrass or bluebunch wheatgrass.

10. Hawk Mountain RNA Burn (T.40S., R.31E. Section 29-32). The approximate size of the burn is 300 acres. The burn area is in the west edge of the Hawk Mountain RNA which is about 1 mile northeast of Hawksie Walksie and 2 miles south of Hawks Valley. The dominant vegetation is big sage and bluebunch wheatgrass. The reason for this burn is to determine if the ecological condition of this small part of the RNA can be improved through burning to match the rest of the RNA.

11. Butcher Flat Burn (T.38S., R.30E. Section 25,35,36; T.38S., R.31E. Section 30,31; T.39S., R.30E. Section 1-3,10-16,21-27; T.39S., R.31E. Section 5-7,18-20,30). The approximate size of the burn is 12,700 acres. The west border of the burn area is the Beaty Butte Road and edge of the burn parallels the road where it divides and goes north to Shallow Lake and goes southeast to Acty camp. The north border is the middle of Butcher Flat where the amount of fuel has declined to a level that would probably not support a fire. The dominant vegetation is big sage with a bottlebrush squirreltail understory. The southern half of the burn area is in late seral stage and has significant amounts of Thurber s needlegrass while the northern half of the burn area is in a mid-seral stage with lesser amounts of grass in the understory.

12. Fish Fin Rim Burn (T.36S., R.30E. Section 26,27,32-36; T.37S., R.30E. Section 1-6, 8-11 The approximate size of the burn is 5,500 acres. The area is located on a bench top directly west of Fish Fin Rim. The entire boundary of the burn is the rim for this bench top. The dominant vegetation is big sage with either Thurber s needlegrass or bottlebrush squirreltail as the dominant understory.

13. East Gulch Burn (T.36S., R.30E. Section 16,17,19-21,28-31; T.36S., R.29E. Section 36; T.37S., R.29E. Section 1,2,11,12). The approximate size of the burn is 4,700 acres. The burn is located between the East Gulch Road on the west border and the main Beaty Butte on the east border. The burn parallels the East Gulch Road along the east side of the road up to the junction with the old military road. The dominant vegetation is big sage and the understory changes from east to west with a bluebunch wheatgrass understory on the western third of the burn; a needlegrass understory in the middle of the burn area; and a bottlebrush squirreltail understory on the east third.

14. Beaty Butte Burn (T.36S., R.29E. Section 13, 15, 20-28,34,35; T.37S., R.29E. Section 2,3). The approximate size is 5,700 acres. The burn is located between the East Gulch Road on the southeast and the road around Beaty Butte on the northwest edge of the burn. The road between DL spring and Rattlesnake Butte form the northern border of the burn. The dominant vegetation is big sage with a little low sage in places. The dominant understory grasses vary, with Thurber s needlegrass and bottlebrush squirreltail being the most common. Sandberg s bluegrass and bluebunch wheatgrass are also found as dominant grasses in some places.

15. Old Military Road Burn (T.36S., R.30E. Section 8,9,17,18,19,30). The approximate size is about 2,000 acres. The burn is located north of the East Gulch Road and south of the Old Military road. The east edge is where these two roads join. The western border is the main Beaty Butte Road. The dominant vegetation is big sagebrush with bottlebrush squirreltail.

16. Surveyor s Lake Burn (T.37S., R.29E. Section 25; T.37S., R.30E., Section 6,7,15-21,29-31). The approximate size of the burn is 5,000 acres. The burn is located west of Surveyor s Lake with the northern boundary being the Shallow Lake Road and the road to Big Dog waterhole. The burn is bordered on the west by the road from Wilson Spring and on the south by the Wilson Spring road and the Shallow Lake road. The eastern boundary is a small drainage that runs from the Big Dog waterhole road south to Surveyor s Lake. The dominant vegetation is big sagebrush with about half of the burn area having a bluebunch wheatgrass understory. The understory in the rest of the burn area is Sandberg s bluegrass, Thurber s needlegrass or bottlebrush squirreltail.

Appendix D
Weed Prevention Schedule

Table 1. Weed Prevention Schedule for the Lakeview Resource Area.

Prevention Activity	When	Who Is Responsible
Check body and undercarriage of off-road vehicles for plant material and clean with best available method before leaving weed infested areas.	All Year	All field going employees
Evaluate construction and road maintenance schedule, work with Force Account personnel to avoid spreading weeds if known infested sites are to be disturbed; work with fire personnel to high pressure wash plant parts, mud, etc. from equipment before leaving infested sites. Assure that permits or contracts with soil disturbing activities have provision for sanitizing equipment prior to entering BLM sites.	All Year	Area Weed Coordinator, Equipment Operators, Fire Personnel, and Contract writers
Revegetate areas where vegetation removal occurs (e.g., fire line construction, project construction and maintenance activities)	Fall	Force Account and Fire Personnel
Inspect gravel and fill material sites to assure weed-free material is used in weed-free areas.	All Year	Botanist, Area Weed Coordinator
Provide noxious weed brochures at recreation areas, Silver Lake RD, BLM Area Office	Spring, Summer, Fall	Recreation
Conduct weed identification training for field going employees.	Spring	Weed Coordinator
Use prescribed burns to reduce noxious weed seed production as appropriate.	Spring, Fall	Weed Coordinator and Fire personnel
Assess weed potential/risk when developing project proposals, including addressing in NEPA documents. Consider degree of physical disturbance and likelihood of weed invasion in alternatives for any management action.	All Year	Area Weed Coordinator, Project Proponent

Table 1. Weed Prevention Schedule for the Lakeview Resource Area, continued.

Prevention Activity	When	Who Is Responsible
Systematically inventory Resource Area to detect new invaders and expansions of established noxious weeds.	Spring and Summer	Weed Coordinator with field personnel
Consider off-road vehicle closures in areas of known noxious weed infestations	All Year	Area Manager
Consider timing of livestock movement from infested to non-infested areas to minimize weed seed transport in areas of moderate to high ecological risk.	All Year	Range Management Specialist and Permittee

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Appendix E
Data Tables

Table 1. Watershed Descriptions

Watershed Break		
Region (1st order)	Great Basin	Pacific Northwest
Subregion (2nd order)	Black Rock Desert-Humbolt	Oregon Closed Basin
Basin (3rd order)	Black Rock Desert	Oregon Closed Basin
Subbasin (4th order)	Thousand-Virgin	Guano, Nevada
Watersheds (5th order)	2 Unnamed	19 Unnamed

Table 2. Water Quality

Water Quality Parameter	Beneficial Uses Affected
Aquatic Weeds or Algae	Water Contact Recreation, Aesthetics, Fishing
Bacteria (Fecal Coliform)	Water Contact Recreation
Biological Criteria	Resident Fish and Aquatic Life
Chlorophyll a	Water Contact Recreation, Aesthetics, Fishing, Water Supply, Livestock Watering
Dissolved Oxygen	Resident Fish and Aquatic Life, Salmonid Spawning and Rearing
Habitat Modification	Resident Fish and Aquatic Life, Salmonid Spawning and Rearing
Flow Modification	Resident Fish and Aquatic Life, Salmonid Spawning and Rearing
Nutrients	Water Contact Recreation, Aesthetics, Fishing
pH	Resident Fish and Aquatic Life, Water Contact Recreation
Sedimentation	Resident Fish and Aquatic Life, Salmonid Spawning and Rearing
Temperature	Resident Fish and Aquatic Life, Salmonid Spawning and Rearing
Total Dissolved Gas	Resident Fish and Aquatic Life
Toxics	Resident Fish and Aquatic Life
Turbidity	Resident Fish and Aquatic Life, Water Supply, Aesthetics

Table 3. Oregon Land Cover and Vegetation Types by Dominant Plant Species [1]

CULTURAL LANDSCAPE COVER TYPES

2. Grass Seedings and Grasslands Following Fire or Clearing	001. cheatgrass and other annual bunchgrass 004. crested wheatgrass and other perennial bunchgrass seedings

NATURAL LANDSCAPE COVER TYPES & VEGETATIVE COMPLEXES

22. Big Sagebrush Scrub (*Artemisia tridentata* scrub)	298. Big sagebrush/need-and-thread grass 300. Big sagebrush/basin wildrye 301. Big sagebrush/bluebunch wheatgrass 303. big sagebrush/Idaho fescue 304. big sagebrush/Sandberg bluegrass 305. big sagebrush/bottlebrush squirreltail 307. big sagebrush/Thurbers needlegrass
24. Low Sagebrush Scrub (*Artemisia arbuscula* scrub)	313. low sagebrush/bluebunch wheatgrass 314. low sagebrush/Idaho fescue 315. low sagebrush/Sandbergs bluegrass 316. low sagebrush/bottlebrush squirreltail
29. Mountain Big Sagebrush Scrub (*Artemisia tridentata* ssp. *vaseyiana* scrub)	322. mountain big sagebrush/Sandbergs bluegrass 323. mountain big sagebrush/Idaho fescue 324. mountain big sagebrush/bluebunch wheatgrass-bottlebrush squirreltail
31. Silver Sagebrush Scrub (Artemisia cana scrub)	326. silver sagebrush playa or bottomland
32. Black Greasewood Scrub (*Sarcobatus vermiculatus* scrub)	361. black greasewood playa or bottomland
33. Shadscale Scrub (*Atriplex confertifolia* scrub)	365. shadscale/bottlebrush squirreltail salt desert shrub
38. Big Sagebrush-Bitterbrush Shrubland (*Artemisia tridentata=Purshia tridentata* shrubland)	340. big sagebrush-bitterbrush/Idaho fescue 350. big sagebrush-bitterbrush/bluebunch wheatgrass
41. Mountain Mahogany Shrubland (*Cercocarpus ledifolius* shrubland)	380. curlleaf mountain mahogany
42. Quaking Aspen-Serviceberry-Bittercherry-Snowbrush Shrublands (*Populus tremuloides=Amalanchier alnifolia-Prunus emarginata-. Symphorcarpos occidentalis* shrublands) (replace snowbrush with snowberry)	450. serviceberry, bitterbrush, bittercherry snowberry montain brush
45. Western Juniper Woodlands (*Juniperus occidentalis* woodlands)	410. western juniper/bunchgrass

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[1] Many of these communities are only partially represented or exist only in a few places in the Beaty Butte Allotment. Source: Kagan and Caicco, 1996.

Table 4. Ecological Site Descriptions and Seral Stages, by Pasture.

Vegetation Type	Total Acres	Acres Early Seral	Acres Mid Seral	Acres Late Seral	Acres Climax
		Jack Lake Pasture - Beaty Butte Allotment			
Lakebed Associated Vegetation	2,300	1,809	591	0	0
Silver Sage-Muhly and Silver Sage-Nevada Bluegrass	410	410	0	0	0
Big Sage-Bluebunch Wheatgrass	249	0	249	0	0
Big Sage-Squirreltail	299	0	299	0	0
Big Sage-Thurber's Needlegrass	680	365	315	0	0
Big Sage-Sandberg's Bluegrass	228	0	228	0	0
Mountain Big Sage-Idaho Fescue	662	0	0	662	0
Low Sage-Sandberg's Bluegrass	17,006	0	16,625	381	0
GRAND TOTAL	**21,585**	**2,335**	**18,207**	**1,043**	**0**
RL8			213 ACRES NOT RATED		
		Jack Creek Pasture - Beaty Butte Allotment			
Lakebed Associated Vegetation	664	306	358	0	0
Big Sage-Cheatgrass	225	225	0	0	0
Big Sage-Bluebunch Wheatgrass	1,174	0	1,174	0	0
Big Sage-Squirreltail	1,311	844	467	0	0
Big Sage-Thurber's Needlegrass	895	531	374	0	0
Big Sage-Sandberg's Bluegrass	420	0	420	0	0
Mountain Big Sage-Idaho Fescue	268	0	49	219	0
Low Sage-Sandberg's Bluegrass	17,990	0	17,990	0	0
Juniper-Low Sage-Idaho Fescue	196	0	0	196	0
GRAND TOTAL	**23,143**	**1,906**	**20,822**	**415**	**0**
RL8	ROCKLAND		26 ACRES NOT RATED		

Table 4. Ecological Site Descriptions and Seral Stages, by Pasture, continued.

Vegetation Type	Total Acres	Acres Early Seral	Acres Mid Seral	Acres Late Seral	Acres Climax
Guano Lake Pasture - Beaty Butte Allotment					
Silver Sage-Thickspike Wheatgrass and Silver Sage	1,164	1,164	0	0	0
Big Sage-Cheatgrass	3,342	3,342	0	0	0
Big Sage-Bluebunch Wheatgrass	200	0	161	39	0
Big Sage-Squirreltail	3,094	1,657	1,437	0	0
Big Sage-Thurber's Needlegrass	130	0	130	0	0
Big Sage-Thickspike Wheatgrass	472	472	0	0	0
Low Sage-Sandberg's Bluegrass	400	0	400	0	0
Thickspike Wheatgrass	4,716	4,716	0	0	0
Lakebed Associated Vegetation	3,445	3,445	0	0	0
GRAND TOTAL	**16,963**	**14,796**	**2,128**	**29**	**0**
RL 8	131		NOT RATED		
Spaulding Pasture - Beaty Butte Allotment					
Silver Sage-Grass	932	525	407	0	
Big Sage-Bluegrass	850	850	0	0	
Big Sage-Cheatgrass	10,874	10,449	425	0	
Big Sage-Bluebunch Wheatgrass	514	0	0	514	
Big Sage-Squirreltail	8,796	0	8,796	0	
Big Sage-Needle and Thread	2,277	0	2,277	0	
Big Sage-Thurber's Needlegrass	2,187	73	2,114	0	
Low Sage-Squirreltail	65	0	65	0	
GRAND TOTAL	**26,495**	**11,897**	**14,084**	**514**	
Rockland		149 ACRES NOT RATED			
Hawk Valley Seeding Pasture - Beaty Butte Allotment					
Big Sage	42	0	42	0	0
Big Sage-Crested Wheatgrass	6,880	0	0	6,880	0
Big Sage-Thurber's Needlegrass	779	0	0	779	0
Big Sage-Idaho Fescue	476	0	108	368	0
Big Sage-Sandberg's Bluegrass	7,693	0	6,336	1,357	0
Low Sage-Sandberg's Bluegrass	198	0	0	198	0
Green Rabbitbrush-Thurber's Needlegrass	25	0	25	0	0
GRAND TOTAL	**16,093**	**0**	**6,511**	**95,82**	**0**
RL 8	Rockland		620 ACRES NOT RATED		

Vegetation Type	Total Acres	Acres Early Seral	Acres Mid Seral	Acres Late Seral	Acres Climax
Common Pasture - Beaty Butte Allotment					
Silver Sage-Muhly and Silver Sage	1,523	284	1,239	0	0
Big Sage-Cheatgrass	20,016	6,717	13,200	0	0
Big Sage-Bluebunch Wheatgrass	50,467	0	16,854	33,559	54
Big Sage-Squirreltail	105,831	13,410	85,437	6,984	0
Big Sage-Needlegrass	1,594	0	1,196	398	0
Big Sage-Thurber's Needlegrass	50,979	0	22,061	28,918	0
Big Sage-Sandberg's Bluegrass	32,535	257	25,200	7,078	0
Big Sage-Thickspike Wheatgrass	116	0	116	0	0
Big Sage-Idaho Fescue	11,257	0	3,817	6,979	461
Big Sage-Bluegrass	4,169	1,725	2,444	0	0
Big Sage-Indian Ricegrass	2,446	0	2,446	0	0
Big Sage-Sedge	143	0	143	0	0
Big Sage	20,031	9,107	10,924	0	0
Low Sage-Idaho Fescue	2,668	0	66	2,602	0
Low Sage-Squirreltail	3,131	0	524	2,607	0
Low Sage-Sandberg's Bluegrass	105,447	0	40,272	65,175	0
Low Sage-Bluebunch Wheatgrass	749	0	0	0	749
Low Sage-Thurber's Needlegrass	387	0	387	0	0
Black Sage-Sandberg's Bluegrass	118	0	0	118	0
Green Rabbitbrush-Squirreltail	2,141	2,141	0	0	0
Mountain Mahogany-Cheatgrass	173	0	173	0	0
Mountain Mahogany-Big Sage -Idaho Fescue	23	0	23	0	0
Spiny Hop=Sage	555	0	555	0	0
Spiny Hop--Sage-Squirreltail	7,156	0	7,156	0	0
GRAND TOTAL	**423,655**	**33,641**	**234332**	**154,418**	**1,264**
RL/8	Rockland		6,020 ACRES NOT RATED		

Table 5. Major Vegetation Communities in the Beaty Butte Allotment.

Vegetation Type	Total Acres	Acres Early Seral	Acres Mid Seral	Acres Late Seral	Acres Climax
Silver Sage-Grass and Silver Sage	4,025	2,379	1,646	0	0
Lakebed Associated Vegetation	6,570	5,721	849	0	0
Thickspike Wheatgrass	4,716	4,716	0	0	0
Big Sage-Crested Wheatgrass	6,880	0	0	6,880	0
Big Sage-Cheatgrass	35,380	21,656	13,724	0	0
Big Sage-Bluebunch Wheatgrass	53,582	0	19,416	34,112	54
Big Sage-Squirreltail	121,076	15,911	98,181	6,984	0
Big Sage-needlegrass	1,594	0	1196	398	0
Big Sage-Needle and Thread	2,277	0	2277	0	0
Big Sage-Thurber's Needlegrass	56,740	969	26,074	29,697	0
Big Sage-Sandberg's Bluegrass	40,876	257	32,184	8,435	0
Big Sage-Thickspike Wheatgrass	588	472	116	0	0
Big Sage-Idaho Fescue	12,877	0	3,974	8,442	461
Big Sage-Bluegrass	5,019	2,575	2,444	0	0
Big Sage-Indian Ricegrass	2,446	0	2,446	0	0
Big Sage-Basin Wildrye	639	0	639	0	0
Big Sage-Sedge	143	0	143	0	0
Big Sage	20,073	9,107	10,966	0	0
Low Sage-Idaho Fescue	2,668	0	66	2,602	0
Low Sage-Squirreltail	3,196	0	589	2,607	0
Low Sage-Sandberg's Bluegrass	141,586	0	75,832	65,754	0
Low Sage-Bluebunch Wheatgrass	749	0	0	0	749
Low Sage-Thurber's Needlegrass	387	0	387	0	0
Black Sage-Sandberg's Bluegrass	118	0	0	118	0
Green Rabbitbrush-Squirreltail	2,141	2,141	0	0	0
Green Rabbitbrush -Thurber's Needlegrass	25	0	25	0	0
Mountain Mahogany-Cheatgrass	173	0	173	0	0
Mountain Mahogany-Big Sage -Idaho Fescue	23	0	23	0	0
Spiny Hop-Sage	555	0	555	0	0
Spiny Hop=Sage-Squirreltail	7,156	0	7,156	0	0
Juniper-Low Sage-Idaho Fescue	196	0	0	196	0
Rockland	7,278	Not Rated			
GRAND TOTAL	**534,474**	**65,904**	**301,081**	**166,225**	**1,264**

Table 6. Known Populations of Noxious Weeds.

Name	Location	Date First Observed
Hoary Cress	T38S R27E Sec 6 SWNE	1996
	T38S R27E Sec 5 NWSW	1996
	T41S R29E Sec 19 SENE	1996
Canada Thistle	T39S R27E Sec 6 NWSW	1996
	T39S R27E Sec 32 NWNE	1996
	T36S R29E Sec 30 NWNW	1996
Scotch Thistle	T40S R30E Sec 11 NENE	1996
	T39S R29E Sec 25 SWSW	1996
	T39S R27E Sec 18 SENE	1996
	T39S R27E Sec 17 NWSW	1996
Bull Thistle	T40S R30E Sec 12 NESE	1996
	T40S R31E Sec 7 SWSW	1996
	T39S R29E Sec 25 SWSW	1996
	T37S R29E Sec 22 SWNE	1996
	T37S R29E Sec 15 NESW	1996
	T37S R29E Sec 10 SWNW	1996
	T36S R29E Sec 28 NESW	1996
	T37S R29E Sec 7 NWSW	1996
	T39S R27E Sec 32 NWNE	1996
	T39S R26E Sec 12 NESW	1996
Morning Glory	T40S R27E Sec 3 NWSW	1996
Mediterranean Sage	T38S R26E Sec 24 NWSE	1996
Halogeton	T36S R29E Sec 30 NWNW	1996
	T36S R29E Sec 10 NENW	1996
Canada Thistle	T37S R29E Sec 15 SWSW	1996
Hoary cress	T40S R27E Sec 27 SWSW	1995
Hoary cress	T40S R27E Sec 25 SESE	1995
	T40S R27E Sec 36 WNE	
	T40S R28E Sec 30 NW	
Yellow Star-thistle	T41S R28E Sec 16 SWNW	1995
Canada Thistle	T40S R29E Sec 25 SENE	1993
Canada Thistle	T39S R29E Sec 25 SWSW	1993

Table 7. Beaty Butte Spring Developments

Spring Name	Project Number	Township	Range	Section	Sub
Juniper	1077	40	31	13	NENE
Barry	1097	39	26	11	NWNW
Scott s Cache	1098	40	31	12	SWSW
Witt s Cache	1100	40	31	12	SWSW
Willow	3503	36	29	30	SWNW
Sunset	3512	36	28	36	NENE
Mudhole	4036	37	29	31	NWNE
Seep	4037	39	30	34	NESW
North Highland	4039	37	29	28	SWSE
Sagebrush	4110	41	28	4	NENE
Shirk	4111	39	27	5	SWSW
Slide	4112	40	27	36	NWSE
Sunrise	4113	38	29	22	NESW
B Lane	4369	41	28	15	NWSW
Crossroads	4371	40	28	24	NWSE
Snake Eyes	4373	40	28	27	NESE
Mahogany	4374	40	30	23	NWNW
Phantom	4375	39	29	32	SESW
Julia	4377	32	39	27	SENW
Double Rim	4500	38	29	29	SWSE
Stud	4535	41	28	3	NWNW
Granite	5001	40	32	7	NESW
Bone	5164	39	29	35	SESW
Horsetrap	5520	38	28	12	SWNW

Table 8. Flow Records from Selected Beaty Butte Springs

Spring Name	Date-Flow (gpm)
Willow	2/88 - 11.5, 6/93 - 10
West Twin	2/88 - 5, 6/93 - 5
Twin	2/88 - 5, 6/22 - 4
Mustang	6/69 - 4, 6/93 - 2.5
Mudhole	6/69 7.4, 9/84 - 3, 6/93 - 7
Lick	6/68 - 1, 6/69 - 17, 9/84 - 15, 7/93 - 1
DL	2/88 - 6.5, 6/93 - 8
Buena Vista	2/88 - 2.6, 6/93 - 5

Table 9. Beaty Butte Spring Exclosures on 1988 Agreement

	ACRES			FENCE (feet)		
Spring Name	**Private**	**BLM**	**Total**	**Private**	**BLM**	**Total**
West Twin	9.5	1.8	11.3	4,200	1,100	5,300
Twin	6.1	0	6.1	2,500	0	2,500
Mudhole	0	1.3	1.3	0	1,750	1,750
DL	3.7	0	3.7	2,760	0	2,760
Buena Vista	.1	0	.1	310	0	310
Mustang	0	5.2	5.2	0	4,450	4,450
E. Road	0	7.3	7.3	0	2,200	2,200
E. Road Gulch*	0	5.9				
N. Highland	0	1	1	0	200	200
Sunrise	3.7	3.7	0	2,000	2,000	2,000
Lick	6.9	5.5	12.4	2,350	2,800	5,150
Rose-briar	23	10.3	33.3	4,000	3,600	7,600
Wilson	6.9	0	6.9	3,500	0	3,500
E. Corral	6.0	2.3	8.3	2,000	1,000	3,000
Total	**65.9**	**38.4**	**104.3**	**23,620**	**19,100**	**42,720**

* Not completed

Table 10. Guano Stream Survey Summary for 1991

Allotment Pasture	BLM Mile1	Stream Mile2	Cond.	Trend	Bank Erosion	Dom. Part3	Grad	Conf.4	Notes
0600/Guano Creek	0.0		P		485	C	1	W	Dry with pools
	.25		G		1455	C	1	M	Dry with pools
	.5		F		0	C	1	M	Dry
	.75		G		0	C	1	W	Dry - New reach
	1.0		G		180	C	1.5	W	Dry
	1.25		G		85	C	1.5	W	Dry with pools
	1.5		F		210	C	1	M	Dry - New reach
	1.75		F		160	C	1	M	Dry with pools
	2.0		F		0	C	1/3	W/VM	Dry - Reach @ 1085
	2.25		F		0	LR	3	VW	Dry with pools
	2.5		G		210	LR	3	VW	Dry with pools
	2.75		G		0	LR/B	3/8/3	VW	Dry with pools - Reach @ 800 & 890
	3.0		F		0	LR/B	5	VW	Dry with pools
	3.25		F		0	B	5/10/2	VW	Dry with pools - Reach @ 180 & 885
	3.5		F		0	LR	2/3	VW	Dry - Reach @ 510
	3.75		F		0	LR	1	W	Dry - New reach
Guano Creek/Jack Lake	4.0		F		0	LR	1	W	Dry with pools - grazed
	4.25		F		0	LR/B	1	W	Dry with pools
	4.5		F		0	LR/B	1	W	Dry with pools
	4.75				0	LR/B	1	W	Dry with pools
0600/Jack Lake	5.0				80	G	1	W	Dry with pools
	5.25				370	G	1	W	Dry with pools
	5.5		F		1380	LR	1	W	Dry with pools
	5.75		P		0	C	1	VW/W	Dry with pools
	6.0		P		380	G	1	?	Dry - Reach @ 1130

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	6.25	P	2250	G	1	W	Dry
	6.5	P	2640	S/G	1	W	Dry
	6.75	P	2640	S/G	1	W	Dry
	7.0	P	2640	S	1	W	Dry
	7.25	P	2240	S	1	M	Dry
	7.5	P	2640	G	1	M	Dry
	7.75	P	2640	G	1	M	Dry
	8.0	P	1060	G	1	M	Dry with pools
	8.25	P	250	G	1	M	Dry with pools
	8.5	P	1400	G	1	M	Dry with pools
	8.75	P	1320	S	1	M	Dry with pools
0600/0216 Guano	9.0	P	990/330	S	1	U	Dry w/pools-0216 @ 990
	9.2	P	0	S	1	M	Dry
	9.5	F	0	S	1	M	Dry
	9.75	F	0	S	1	M	Dry

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[1] BLM Stream Survey Mile

[2] Total Stream Mile

[3] Dominant Particle Size: B=Boulder, LR=Large Rock, C=Cobble, G=Gravel, S=Silt

[4] Confinement: U=Unconfined, M=Moderate, W=Well, VW=Very Well

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Table 11. Beaty Butte Allotment Potential Bird List

SPECIES	ABUNDANCE	HABITATS	SEASON
GREBES			
Pied-billed Grebe**	O	LkMd	SpSuFa
Eared Grebe**	U	LkMd	SpSuFa
Western Grebe	R	Lk	SpFa
WATERFOWL			
Tundra Swan	R	LkMd	SpFa
Canada Goose*	C	LkMd	SpSuFa
Green-winged Teal*	U	LkMd	SpSuFa
Mallard*	C	LkMd	SpSuFa
Northern Pintail*	U	LkMd	SpSuFa
Cinnamon Teal*	C	LkMd	SpSuFa
Northern Shoveler*	C	LkMd	SpSuFa
Gadwall*	C	LkMd	SpSuFa
American Wigeon	C	LkMd	SpFa
RAPTORS			
Turkey Vulture**	C	ClShGr	SpSuFa
Cooper's Hawk	R	ShWd	SpFa
Sharp-shinned Hawk**	O	ShWd	SpSuFa
Northern Harrier*	C	MdGrSh	SpSuFa
Rough-legged Hawk	C	ShGrWd	Wn
Ferruginous Hawk*	O	ShWdGr	SpSuFa
Red-tailed Hawk*	C	ClWdShGr	YL
Swainson's Hawk	R	WdShGr	SpSuFa
Golden Eagle*	C	ClWdShGr	YL
Prairie Falcon*	C	ClWdShGr	YL
American Kestrel*	C	ClWdShGr	YL
GROUSE & QUAIL			
Sage Grouse*	C	MdShGr	YL
California Quail*	C	MdShGr	YL
Chukar*	C	ClGrSh	YL
HERONS			
Snowy Egret	R	LkMd	SpSuFa
Great Blue Heron	U	LkMd	SpSuFa
American Bittern	R	LkMd	SpSuFa
White-faced Ibis	R	LkMd	SpSuFa
CRANES & RAILS			
Sandhill Crane	O	LkMd	SpSuFa
American Coot*	C	LkMd	SpSuFa
SHOREBIRDS			
American Avocet*	C	LkMfMd	SpSuFa
Black-necked Stilt*	O	LkMfMd	SpSuFa
Killdeer*	C	LkMfMd	SpSuFa
Long-billed Curlew*	U	LkMdGr	SpSuFa
Willet*	C	LkMdMf	SpSuFa
California Gull	U	LkMfMd	SpSuFa
Ring-billed Gull	U	LkMdMf	SpSuFa
Forster's Tern	U	LkMfMd	SpFa
Black Tern	U	LkMfMd	SpSuFa
PIGEONS & DOVES			
Mourning Dove*	C	ShWdGrMd	SpSuFa
Rock Dove**	U	ShWdGrMd	YL
OWLS			
Burrowing Owl*	O	ShGr	SpSuFa
Short-eared Owl**	O	Gr	SpSuFa
Great-horned Owl*	O	ClWdShGr	SpSuFa
Western Screech Owl**	O	WdSh	SpSuFa
GOATSUCKERS			
Common Poorwill**	O	WdShGr	SpSuFa
Common Nighthawk*	C	WdShGr	SpSuFa
HUMMINGBIRDS			
Rufous Hummingbird	O	WdSh	SpFa
Black-chinned Hummingbird	R	WdSh	SpFa
WOODPECKERS			
Common Flicker*	C	WdShMdGr	SpSuFa
Hairy Woodpecker	R	Wd	SpSuFa
Downy Woodpecker	R	Wd	SpSuFa
PASSERINES			
Western Kingbird*	O	WdShMd	SpSuFa
Say's Phoebe**	O	WdShMd	SpSuFa
Willow Flycatcher**	O	WdSh	SpSuFa
Horned Lark*	C	ShGr	SpSuFa
Barn Swallow*	C	WdShGr	SpSuFa
Tree Swallow*	C	WdShGrMd	SpSuFa
Cliff Swallow*	U	ClShMd	SpSuFa
Violet-Green Swallow*	U	WdShGrMd	SpSuFa
Scrub Jay**	U	WdShMd	SpSuFa
Black-billed Magpie*	C	WdShMdGr	YL
Common Raven*	C	ClWdShGrMd	YL
House Wren**	O	WdShGr	SpSuFa
Rock Wren*	O	ClShWd	SpSuFa
Marsh Wren*	C	LkMd	SpSuFa
Sage Thrasher*	O	ClShWd	SpSuFa
American Robin*	C	WdShGrMd	YL
Mountain Bluebird*	C	WdShGrMd	YL
Townsend's Solitaire*	C	WdShMd	YL
Northern Shrike	R	WdSh	Wn
Loggerhead Shrike*	C	WdShGr	YL
European Starling*	C	WdShClGrMd	YL
Yellow Warbler**	O	WdMd	SpSuFa
Yellow-rumped Warbler	C	Wd	SpFa
Western Meadowlark*	C	ShGr	SpSuFa
Brewer's Blackbird*	C	WdShGrMd	SpSuFa
Red-winged Blackbird*	C	MdLk	SpSuFa
Brown-headed Cowbird	C	WdShGrMd	SpSuFa
House Finch	O	WdSh	SpSuFa
Purple Finch	R	WdSh	SpSu
Lesser Goldfinch**	R	WdShGr	SpSuFa
Green-tailed Towhee**	O	WdShGr	SpSuFa
Rufous-sided Towhee*	O	WdShGr	SpSuFa
Savannah Sparrow*	C	ShGrMd	SpSuFa
Lark Sparrow**	O	ShGrMd	SpSuFa
Sage Sparrow*	C	ShGr	SpSuFa
Dark-eyed Junco	C	WdSh	SpFa
American Tree Sparrow*	C	WdSh	SpSuFa
Chipping Sparrow*	C	ShGrMd	SpSuFa
Brewer's Sparrow*	O	ShGr	SpSuFa
White-crowned Sparrow	O	ShGr	SpFa
Song Sparrow*	C	WdShMdGr	SpSuFa
Fox Sparrow**	O	ShWd	SpSuFa

Relative Abundance:
A = abundant, nearly always seen in proper habitats & season
C = common, usually seen in proper season & habitats
U = uncommon, can be seen about 25% of visits
O = expected yearly, but only occasionally seen
R = rare, a few individuals or flocks seen every 2 or 3 years
X = accidental, seen less than 5 times in past

Season of Use
Sp = Spring Su = Summer Fa = Fall Wn = Winter YL = Yearlong

Nesting Activity
* = known to nest in area ** = suspected to nest in area

Habitats:
Lk = lake & immediate shoreline
Mf = mudflats & alkali playas
Md = grass, sedge & rush meadows, with associated springs seeps ponds & riparian woods
Sh = sagebrush, rabbitbrush & grease-wood brushfields
Gr = native & exotic bunchgrass stands
Wd = coniferous & deciduous woods
Cl = cliffs, rocks & talus slopes

Table 12. Beaty Butte Allotment Potential Mammal List

SPECIES	ABUNDANCE	HABITATS	SEASON
SHREWS			
Vagrant Shrew	U	Md,Sh,Wd	YL
Preble's Shrew**	R	Md	YL
Merriam Shrew*	C	Md,Sh,Cl	YL
BATS			
Little Brown Myotis	O	Wd,Cl	SpSuFa
Fringed Myotis	C	Sh,Lk,Wd	SpSuFa
California Myotis	C	ALL	SpSuFa
Small-footed Myotis	O	Sh,Md,Wd	SpSuFa
Western Pipistrel	O	Sh,Md,Wd	SpSuFa
Yuma Myotis	O	Sh,Md,Wd	SpSuFa
Long-eared Myotis	O	Wd,Cl	SpSuFa
Silvery-haired Bat	O	Sh,Md,W	SpSuFa
Hoary Bat	O	Sh,Md,Wd	SpSuFa
Big Brown Bat	C	ALL	SpSuFa
Pallid Bat	O	Sh,Md,Wd	SpSuFa
HARES			
Black-tailed Hare (Jackrabbit)*	A	MdShWdGr	YL
White-tailed Hare (Jackrabbit)*	C	Sh,Wd	YL
Nuttall Cottontail*	C	MdShWdCl	YL
Pygmy Rabbit*	U	Sh,Wd	YL
RODENTS			
Squirrel*	C	Sh	YL
Belding Ground Squirrel*	A	Md,Sh,Gr	YL
Golden-mantled Ground Squirrel	R	Wd,Cl	YL
California Ground Squirrel	R	Sh	YL
Least Chipmunk*	C	Sh,Wd,Cl	YL
Townsend Chipmunk	R	Wd	YL
Northern Pocket Gopher*	C	Md,Gr	YL
Great Basin Pocket Mouse	C	Sh,Wd	YL
Ord Kangaroo Rat	U	Sh,Wd	YL
Yellow-bellied Marmot	U	Sh,Wd	YL
Western Harvest Mouse	X	ALL	YL
Deer Mouse*	A	ALL	YL
Northern Grasshopper Mouse	X	Sh,Gr,Md	YL
Bushy-tailed Woodrat*	C	Sh,Wd,Cl	YL
Long-tailed Meadow Vole*	A	Md,Gr	YL
Montane Meadow Vole	U	Wd	YL
Muskrat*	U	Md,Lk	YL
Western Jumping Mouse	U	Wd	YL
Porcupine*	U	Sh,Wd,Cl	YL
CANIDS			
Coyote*	A	ALL	YL
PROCYONIDS			
Raccoon	O	RvMdShWd	YL
MUSTELIDS			
Long-tailed Weasel*	C	MdWdShCl	YL
Badger*	C	MdWdShCl	YL
Striped Skunk*	O	Wd,Sh,Rv	YL
Spotted Skunk	X	Md,Gr Sh	YL
FELIDS			
Mountain Lion**	R	Wd,Cl	YL
Bobcat**	R	Wd,Cl,Sh	YL
CERVIDS			
Mule Deer*	C	Wd,Sh,Md	YL
ANTILCAPRIDS			
Pronghorn Antelope*	C	Gr,Md,Sh Antelope Ground	YL
OVIDS			
California Bighorn Sheep*	U	Sh,Wd,Cl	YL

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Season of Use
Sp = Spring Su = Summer Fa = Fall Wn = Winter YL = Yearlong

Breeding Activity
* = known to breed in area ** = suspected to breed in area

Habitats:
Lk = lake & immediate shoreline
Mf = mudflats & alkali playas
Md = grass, sedge & rush meadows, with associated springs seeps ponds & riparian woods
Sh = sagebrush, rabbitbrush & grease-wood brushfields
Gr = native & exotic bunchgrass stands
Wd = coniferous & deciduous woods
Cl = cliffs, rocks & talus slopes

Table 13. Beaty Butte Allotment Potential Reptile and Amphibian List

SPECIES	ABUNDANCE	HABITATS	SEASON
		AMPHIBIANS	
Salamanders			
Long-toed Salamander	X	Md	YL
Spadefoot Toads			
Great Basin Spadefoot*	C	Sh,Wd	YL
True Toads			
Western Toad	U	Sh,Md,Lk	YL
Treefrogs			
Pacific Treefrog*	C	Md,Sh,Gr,Wd	YL
		REPTILES	
Leopard Lizards			
Leopard Lizard*	X	Sh,Gr,Wd,Md	YL
Spiny Lizards			
Western Fence Lizard*	C	Sh,Gr,Wd,Cl,Md	YL
Sagebrush Lizard	C	Sh,Wd,Gr	YL
Side-blotched Lizards			
Side-blotched Lizard		Sh,Wd,Gr	YL
Horned Lizards			
Desert Horned Lizard	R	Sh,Gr	YL
Short-horned Lizard*	C	Sh,Gr,Wd	YL
Skinks			
Western Skink*	U	Sh,Gr,Wd,Cl	YL
Boas			
Rubber Boa	U	Sh,Gr,Wd,Md	YL
Racers			
Western Yellow-bellied Racer*	U	Sh,Wd,Md	YL
Striped Whipsnake	R	Sh,Wd,Md	YL
Gopher Snakes			
Gopher Snake*	C	Sh,Gr	YL
Garter Snakes			
Western Terrestrial Garter*	C	Md,Lk,Gr,Sh	YL
Rattlesnakes			
Great Basin Rattlesnake*	C	Sh,Wd,Cl	YL

Relative Abundance:

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C = common: usually seen in proper season & habitats
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Season of Use

Sp = Spring Su = Summer Fa = Fall Wn = Winter YL = Yearlong

Breeding Activity

* = known to breed in area ** = suspected to breed in area

Habitats:

Lk = lake & immediate shoreline
Mf = mudflats & alkali playas
Md = grass, sedge & rush meadows, with associated springs, seeps ponds & riparian woods
Sh = sagebrush, rabbitbrush & grease-wood brushfields
Gr = native & exotic bunchgrass stands
Wd = coniferous & deciduous woods
Cl = cliffs, rocks & talus slopes

Table 14. Lake County Employment, by Place of Work.

	1981	1991
Total Employment	4,058	4,297
By Type:		
Wage and Salary	3,046	3,091
Proprietors	1,012	1,206
Farm	396	436
Non-Farm	616	767
By Industry:		
Farm	984	989
Non-Farm	3,074	3,308
Private	2,058	2,238
Agriculture Service/Forest/Fishing/Other	53	100
Mining	(D)	30
Construction	161	120
Manufacturing	519	449
Transportation and Public Utilities	111	138
Wholesale Trade	(D)	78
Retail Trade	561	60
Finance, Insurance, and Real Estate	161	121
Services	383	562
Government and Government Enterprises	1,016	1,070
Federal, Civilian	381	432
Military	31	34
State And Local	604	604

(D) No shown to avoid disclosure of confidential information

Source: BEA, Regional Economic Information System

Table 15. Economic Impacts to Lake County of Livestock Grazing on Beaty Butte Allotment

% of Cattle Displaced From County	25%	50%	100%
Economic Impacts at Current Livestock Number (1,925 Cattle) on Beaty Butte Allotment (1993-1996)			
Direct Sales ($)	$195,946	$391,892	$783,783
Economic Impact to Lake County Using Multiplier	$312,593	$625,185	$1,250,370
Economic Impacts if Beaty Butte Allotment was Stocked at Full Permitted Numbers (4,020 Cattle)			
Direct Sales ($)	$409,196	$818,392	$1,636,784
Economic Impact to Lake County using Multiplier	$652,790	$1,305,581	$2,611,161

Table 16. Estimated Costs of Range Improvements by Alternative (1997 Dollars).

Alternative	Fences (Average Cost/Mile $3,000)	Reservoirs and Waterholes (Average Cost/ Structure $4,000)	Pipeline (Average Cost/Mile $6,500)	Burns (Average Cost/Acre $7 With Seeding Add $15/Acre)	Springs (Average Cost/Site $3,000)	Brush Control (Average Cost/Acre $30	Total
1	52.5 Miles $157,500	38 Structures $152,000	16 Miles $104,000	Burn & Seed 37,000 Acres $810,000	1 Spring $3,000	500 Acres $15,000	$1,278,500
2 and 4	38 Miles $114,000	5 Structures $20,000	7 Miles $45,500	Burn 79,900 Acres $559,000 Burn and Seed 6,500 Acres $143,000	1 Spring $3,000	0 Acres $0	$881,500
3	20 Miles $60,000	4 Structures $16,000	7 Miles $45,500	burn 79,900 Acres $559,000 Burn and Seed 6,500 Acres $143,000	1 Spring $3,000	0 Acres $0	$826,500
5	0 Miles $0	0 Structures $0	0 Miles $0	Burn 79,900 Acres $559,000	0 Spring $0	0 Acres $0	$559,000

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Appendix F

Soils

Major Soil Groups within the Beaty Butte Allotment

The major soil groups found within the allotment are listed and briefly characterized in Table 1. The shallow loamy group (24% of the allotment) is the most common group and includes 6 different soil series with the main characteristic being a shallow loam surface layer of 0-3 inches. This group of soils is well drained and has moderately slow permeability. The available water capacity is 2-4 inches and the water erosion hazard is slight-moderate. There is often a hardpan layer but it is found deeper (15-24") than the soils in the claypan group. The potential vegetation is bluebunch wheatgrass, Wyoming big sagebrush, Thurber's needlegrass, Indian rice grass and bottlebrush squirreltail. This group is found primarily in the northern part of the allotment on the flat terrain east, north and west of Beatys Butte. This group is the dominant soil within the proposed prescribed burn projects numbers 12 and 16. These soils are also present in the prescribed burn projects numbered 1, 4 and 14 (Maps 3 and 4).

The groups of soils described as claypan soils are the second most common soils and occupy about 20% of allotment. There are seven different mapping units within the group and the Anawalt loam series occupies 86% of the acres in this group. The surface layer is typically a brown loam about 0-4 inches deep and the main characteristic is a shallow claypan layer at 3-10 inches. These soils are well drained and permeability is slow. The available water capacity is about 2 inches and the shrink-swell potential is high at 9-17 inches. The potential vegetation is low sagebrush with bluebunch wheatgrass and Sandberg bluegrass. These soils are found in the southern part of the allotment and are the dominant soil in the area known as Sagenen Flats. There are inclusions of claypan soils within the proposed prescribed burn area number 8 (Maps 3 and 4).

The soil group described as clayey occupies about 16% of the allotment. There are 6 mapping units within this group with no one dominant series. This group is differentiated from the claypan by the amount of clay in the upper layers of the soil. Typically the surface layer is 0-3 inches of loam or clayloam with clay in the lower layers. There is a claypan in these soils between about 10-20 inches deep. These soils are well drained and permeability is slow above the claypan. The available water holding capacity is 1-2 inches and the hazard of water erosion is slight to moderate. The potential vegetation is Wyoming big sagebrush, bluebunch wheatgrass and Sandberg bluegrass. These soils are scattered through the allotment and tend to be found on relatively flat benches and terraces. These soils are found within the proposed prescribed burn areas numbered 1, 4, 7, 9, 11 ,12 ,13 and 14 (Maps 3 and 4).

The sandy loam soil group occupies about 12% of the allotment and there are seven soil series within this group. The corral fine sandy loam makes up about 62% of this group. The typical soil profile has a sandy loam surface layer of about 0-5 inches. These soils can be shallow to bedrock (12-20 inches). These soils are well drained and permeability is moderately slow. The available water holding capacity is about 2 inches and the water and wind erosion hazard is moderate. The fine sandy loam is subject to soil blowing if the vegetation cover is removed. The potential vegetation is Wyoming big sagebrush, Thurber's needlegrass and Sandberg bluegrass. These soils are found in the flats in the east part of the Spaulding pasture and along the area west of Buckaroo Pass. These soils are also found in the flats east of Beatys Butte. These soils occupy more than half the acreage within the proposed prescribed burn areas numbered 6, 7, 13 and 15, and portions of the areas numbered 1, 4, 12 and 14 (Maps 3 and 4).

There is a small group of soils (1% of the allotment) that is described as sandy because they are fine sand or loamy sand. There are 4 mapping units in this group. The fine sand soils are represented by the Zorravista fine sand series and the surface layer is 0-4 inches of fine sand. Below that is a loamy sand layer that is very deep to bedrock (60 inches). This soil is excessively drained and permeability is very rapid. The available water capacity is 3 inches and the water erosion hazard is slight, but the wind erosion hazard is severe. The potential vegetation is fourwing saltbush, Indian ricegrass and needle-and-thread grass. These soils are found in the southern part of the allotment west of Daughtery Rim along the base of the rim. The loamy sand soil in this group is a Raz-Brace complex with overblown sand on the surface. The typical profile has a 0-3 inch surface layer of loamy sand with loam and clay loams underneath. There is a hardpan at 10-18 inch depth. These soils are well drained and permeability is rapid for 3 inches and then is moderately slow. The available water capacity is 2 inches and the water erosion hazard is moderate, but the wind erosion hazard is severe. The potential vegetation is basin big sagebrush, needle-and-thread grass, Thurber's needlegrass and basin wildrye. These soils are also found west of Daughtery Rim along the base and north of the fine sandy soils.

The group of soils called loamy occupies about 9% of the allotment and there are 10 soil series within this group. There is no dominant soil series and the typical soil surface layer has 0-7 of stony, gravelly or cobbly loam. These soils tend be deeper than the previous soils and do not have a claypan layer. These soils are well drained and permeability is moderate. The available water holding capacity is 3-5 inches and the water erosion hazard is moderate to severe. The potential vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass, and basin wildrye. These soils are scattered around the allotment and occupy portions of the proposed prescribed burn areas numbered 2, 3 and 9 (Maps 3 and 4).

There are two groups of soils that occur on slopes and they are the shallow loams and the loamy. The shallow loams on the slopes occupy about 6% of the allotment and the loamy on the slopes occupy about 3% of the allotment. The shallow loams on slopes include 8 mapping units and generally have a surface layer of gravelly or cobbly clay loam of 0-4 inches. The depth to bedrock is about 24 inches. These soils are well drained and permeability is moderately slow. The available water capacity is 4 inches and water erosion hazard is severe to very severe. The potential vegetation is bluebunch wheatgrass and mountain big sagebrush. The loamy soils on slopes include 5 mapping units and typical profile has 0-7 inch extremely stony loam surface layer and is about 33 inches to bedrock. These soils are well drained and the permeability is moderate. The available water capacity is 3 inches and the water erosion hazard is severe. The potential vegetation is mountain big sagebrush, Idaho fescue, bluebunch wheatgrass and basin wildrye. Both these soil groups are found on the on Beatys Butte, Lone Grave Mountain, Acty mountain, Hawk Mountain and other areas with steep slopes. Both these soil groups are found within project areas number 2, 6, 9 and 10 proposed for prescribed burns (Maps 3 and 4).

There is a group of soils described as thin surface claypan with 4 mapping units which makes up about 3% of the allotment. The Freznik soil series makes up 95% of this group. This soil differs from the other claypan because the surface layer 0-3 inches and is a very stony loam instead of just clay loam. The claypan in this soil is even shallower at 1-5 inch depth. These soils are well drained and the permeability is moderate up to 3 inches but below that it is very slow. The available water capacity is 5 inches and the water erosion hazard is moderate. The potential vegetation is low sagebrush and Sandberg bluegrass. This soil is mostly found on a flat north to south running rim that is east of Spaulding Reservoir and west of chimney rock, and on large bench areas along the west side of the west pastures. There are no prescribed burns planned in this soil type.

The soils around the lakebeds are described as the Lake terrace group and include 8 different mapping units that make up 3% of the allotment. The Lake terrace soils that are found around the larger lakes and wet areas are represented by the Langslot soil series and the typical profile has a surface layer of 0-8 inches of silty loam. This soil is very deep, (60" to bedrock) poorly drained with slow permeability. The available water capacity is 5 inches and the water erosion hazard is none to slight. During the high water period (January-May) the water table may be from 6 inches above the surface to 24 inches below the surface. The potential vegetation is creeping wildrye, bottlebrush squirreltail, Nevada bluegrass and silver sagebrush. These soils are found mostly around Guano Lake and Shirk Lake.

The wetlands and playa group includes 4 different soils series and they occupy about 2% of the allotment. The common characteristics include the silty clay or silty loam texture and they are very deep (60 inches to bedrock). They are poorly drained and have slow permeability. The water erosion hazard is slight but the wind erosion hazard may be severe if the water level is low and the bare ground is exposed. During the winter and spring months these soils are below the water table. The mudpot soil is below the water table through July most years. The mudpot silty clay makes up about 77% of this group. The potential vegetation in this soil is spikerush, Baltic rush, dock, povertyweed, mat muhly and bottlebrush squirreltail. These soils include Guano Lakebed, an area west of Shirk Lake, and lake playas in the northeast part of the allotment.

About 1% of the allotment was mapped as rock outcrop or rubbleland.

Table 1. Soils Groups, as Combined by Common Characteristics

Group Name	Percentage of Allotment	Description of Typical Soil within Group, Distinguishing Characteristics
Shallow Loamy	24%	Shallow loam surface layer 0-3" Deep claypan layer 15-24"
Claypan	20%	Brown Loam Surface Layer 0-4" Shallow Claypan 3-10" Shrink-Swell potential high at 9-17"
Clayey	16%	Surface layer Clay Loam or Loam 0-3" Clay always found in lower layers Claypan at 10-20"
Sandy Loam	12%	Sandy Loam surface Layer 0-5" Can be shallow to bedrock Soil blowing Hazard if vegetation removed
Sandy Fine Sand	1%	Surface layer is Fine Sand 0-4" Excessively drained, permeability very rapid Wind erosion hazard severe
Loamy Sand		Overblown Sand on surface, Loamy Sand 0-3" Loams and Clay Loams underneath Hardpan 10-18"
Loamy	9%	Surface layer stony, gravelly, or cobbly Loams 0-7" Soil deeper and no Claypan Water erosion hazard moderate-severe
Shallow loams on Slope	6%	Slope are 20-70% Surface layer cobbly, gravelly loam 0-4" Depth to bedrock is 24" Water erosion hazard is severe-very severe
Loamy on Slope	3%	Slopes 20-70% Stony loam surface layer 0-7" Depth to bedrock is 33" Water erosion hazard is severe
Thin Surface Claypan	3%	Thin surface of very stony loam 0-3" Claypan is 1-5" deep
Lake Terrace	3%	Surface Layer is Silty Loam 0-8" Soil is very deep, 60" Poorly drained with slow permeability Water table varies from 6" above surface to 24" below
Wetlands	2%	Silty Clay or Silty Loam 0-60" Poortly drained with slow permeability Below watrer table thru July most years
Rock Outcrop	1%	Rock rims and Ledges with no soil

Glossary

ACEC - Area of Critical Environmental Concern; type of special land use designation specified within the Federal Land Policy and Management Act (FLPMA).

Aquatic Bed Habitat - all wetland and deepwater habitats dominated by plants that grow principally on or below the surface of the water for most of the growing season in most years.

AUM - Animal Unit Month; the amount of forage required to sustain one cow and calf for one month (one AUM equals 6 bighorn sheep months).

Bighorn Sheep Month - the amount of forage necessary to sustain one bighorn sheep for one month (6 bighorn sheep months equals one cattle AUM).

Bureau Assessment Species - Species on List 2 of the Oregon Natural Heritage Database, or those species on the Oregon List of Sensitive Wildlife Species (OAR 635-100-040), that are identified in BLM Instruction Memo OR-91-57, and are not included as a Federal candidate, state listed, or Bureau sensitive species.

Bureau Sensitive Species - Species eligible as Federally listed or candidate, state listed or state candidate (plant) status, or on List 1 in the Oregon Natural Heritage Database, or otherwise approved for this category by the State Director.

BLM - Bureau of Land Management; government agency with the mandate to manage Federal lands under its jurisdiction for multiple uses.

Candidate Species - Any species included in the Federal Register ÒNotice of ReviewÓ that are being considered for listing as threatened or endangered by the U.S. Fish and Wildlife Service.

CEQ - Council on Environmental Quality; government agency with oversight of the implementation of the National Environmental Policy Act (NEPA).

CFR - Code of Federal Regulations; government publication listing all Federal regulations in existence.

cfs - Cubic Feet Per Second; means of measuring the flow rate of a liquid, usually water.

Cumulative Impact - The impact that results from identified actions when they are added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes these actions. Such impacts can result from individually minor, but collectively significant actions occurring over a period of time.

Easement - A right in the owner of one parcel of land, by reason of such ownership, to use the land of another for a special purpose not inconsistent with a general property in the owner.

Emergent Habitat - wetland habitat characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens; this vegetation is present for most of the growing season in most years.

Endangered Species - Any species defined under the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range. Listings are published in the Federal Register.

EA - Environmental Assessment; one type of document prepared by Federal agencies in compliance with the National Environmental Policy Act (NEPA) which portrays the environmental consequences of proposed Federal actions which are not expected to have significant impacts on the human environment.

EIS - Environmental Impact Statement; one type of document prepared by Federal agencies in compliance with the National Environmental Policy Act (NEPA) which portrays the environmental consequences of proposed major Federal actions which are expected to have significant impacts on the human environment.

Environmentally Preferred Alternative or Plan - The alternative plan that results in the least damage or most protection, preservation, or enhancement to biological, physical, historic, cultural, and other natural resources. This alternative is clearly identified in the Record of Decision.

Evapotranspiration - combination of the return of water vapor to the atmosphere through evaporation of open water and transpiration of water through living vegetative material.

FLPMA - Federal Land Policy and Management Act of 1976; law mandating that the Bureau of Land Management manage lands under its jurisdiction for multiple uses.

FR - Federal Register; daily government publication reporting all activities going on in the Federal government.

g/L - Grams per Liter (equivalent to parts per million); scientific unit of measure.

HMA - (Wild Horse) Herd Management Area; public land under the jurisdiction of the Bureau of Land Management that has been designated for special management emphasizing the maintenance of an established wild horse herd.

Lacustrine Habitat -permanently flooded lakes and reservoirs, and both seasonally and intermittently flooded lakes; typically extensive areas of deep water with extensive wave action.

Lentic Habitat - low flow or standing water habitat such as lakes, ponds, seeps, bogs, and meadows.

Lotic Habitat - running water habitat such as rivers, streams, and springs.

MFP - Management Framework Plan; older generation of land use plans developed by the Bureau of Land Management. This generation of planning has been replaced by the Resource Management Plan (RMP).

Mineral Estate - Refers to the ownership of minerals at or beneath the surface of the land.

Monitoring and Evaluation - The collection and analysis of data to evaluate the progress and effectiveness of on-the-ground actions in meeting resource management goals and objectives.

NWR - National Wildlife Refuge; an area administered by the U.S. Fish and Wildlife Service for the purpose of managing certain fish or wildlife species.

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NEPA - National Environmental Policy Act of 1969; law requiring all Federal agencies to evaluate the impacts of proposed major Federal actions with respect to their significance on the human environment.

Noxious Weed - a plant specified by law as being especially undesirable, troublesome, and difficult to control.

ppb - Parts Per Billion; scientific unit of measure.

ppm - Parts Per Million; scientific unit of measure.

Preferred Alternative or Plan - The alternative plan, in the Draft EIS, which the agency has initially selected that best fulfills the agencyÕs statutory mission and responsibilities and offers the most acceptable resolution of the planning issues and management concerns.

Prescribed Fire - The introduction of fire to an area under regulated conditions for specific management purposes (usually vegetation manipulation).

Relative Abundance - A measure of species abundance or dominance within a given area or community type that is often presented in terms of percentages. Example: species A comprises approximately 25% of the total number of individuals present in the project area.

RMP - Resource Management Plan; current generation of land use plans developed by the Bureau of Land Management under the Federal Land Policy and Management Act. Replaces the older generation Management Framework Plans.

RNA - Research Natural Area.

Scrub-Shrub Habitat - wetland areas dominated by woody vegetation less than 20 feet tall, including true shrubs, young trees and trees and shrubs that are stunted by environmental conditions.

Seral Stage - the rated departure of a plant community from a described potential natural community (PNC) for a specific ecological site. Low-seral stage is an existing plant community which is defined as 0-25% comparability to the defined PNC; Mid-seral stage is an existing plant community which has 26-50% comparability to the PNC; Late seral stage is 51-75% comparable to the PNC; PNC is an existing plant community with 76-100% comparability to the defined PNC.

Special Status Species - Plant or animal species falling into any one of the following categories: Federally listed threatened or endangered species, species proposed for Federal listing as threatened or endangered, candidate species for Federal listing, State listed species, Bureau sensitive species, Bureau assessment species (see separate definition for each).

Species Diversity - The number, different kinds of, and relative abundances of species present in a given area.

State Listed Species - Any plant or animal species listed by the State of Oregon as threatened or endangered within the state under ORS 496.004, ORS 498.026, or ORS 564.040.

TNC - The Nature Conservancy; private national organization dedicated to the preservation of biological diversity.

Threatened Species - Any plant or animal species defined under the Endangered Species Act as likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Listings are published in the Federal Register.

Unconsolidated Bottom Habitat - all wetland and deepwater habitats with at least 25% cover of particles smaller than stones, and vegetative cover less than 30%; Unconsolidated Shore -all wetland habitats having the following characteristics: (1) unconsolidated substrates with less than 75% areal cover of stones, boulders or bedrock; (2) less than 30% areal cover of vegetation other than pioneering species.

USDA - U.S. Department of Agriculture; government department which oversees the Forest Service and many other agencies.

USDI - U.S. Department of Interior; government department which oversees the Bureau of Land Management and many other agencies.

USFWS - U.S. Fish and Wildlife Service; government agency responsible for managing fish and wildlife and their habitats.

ICBEMP - Interior Columbia River Basin Ecosystem Management Project; an on-going project examining the effects (on a large, regional scale) of past and present land use activities on the Interior Columbia River Basin ecosystem and a small part of the Great Basin ecosystem.

Visual Resource - The visible physical features of a landscape.

WSA - Wilderness Study Area; public land under the jurisdiction of the Bureau of Land Management which has been studied for wilderness character and is currently in an interim management status awaiting official wilderness designation or release from WSA status by Congress.

Literature Cited

Allen C., A. Atkins, M. Stern, and A. Munhall. 1994. *Sheldon Tui Chub (Gila bicolor eurysoma) Investigations in Lake County Oregon, 1994.* Unpublished report prepared for BLM, Lakeview District. Lakeview, OR.

Anderson, E. W. 1993. *Presciption Grazing to Enhance Rangeland Watersheds.* Rangelands, vol. 15(1):31-35.

APHIS. 1987. *Rangeland Grasshopper Cooperative Management Program. Final Environmental Impact Statement.* APHIS, USDA. 552 pp.

APHIS. 1994b. *Animal Damage Control. Final Environmental Impact Statement.* 3 Volumes. APHIS, USDA. Washington, D.C.

APHIS. 1995a. *Site-Specific Environmental Assessment Tiered to the 1987 Final Environmental Impact Statement for Rangeland Grasshopper Cooperative Management Program. Klamath and Lake Counties, Oregon.* Assessment Number OR-04-95. APHIS, USDA. Portland, OR. 28+ pp.

APHIS. 1995b. *Environmental Assessment (EA). Wildlife Damage Management in the Roseburg ADC District in Southwestern Oregon.* APHIS, ADC. Portland, OR.

BLM. 1977. *Beaty's Butte Wild Horse Management Plan.* USDI, BLM, Lakeview District, Warner Lakes Resource Area, Beaty's Butte Planning Unit. Lakeview, OR. 28 pp.

BLM. 1982a. *Lakeview Grazing Management Final Environmental Impact Statement.* USDI, BLM, Lakeview District, Lakeview, OR.

BLM. 1982b. *Rangeland Program Summary. Record of Decision, Lakeview EIS Area.* USDI, BLM, Lakeview District. Lakeview, OR. 24 pp.

BLM. 1982c. *Wilderness Studies Management Framework Plan Amendments. Summary of Land Use Alternatives.* Oregon State Office. BLM, USDI. Portland, OR.

BLM. 1983. *Warner Lakes Management Framework Plan.* USDI, BLM, Lakeview District. Lakeview, OR. 2 volumes.

BLM. 1985a. *BLM Manual Handbook H1741.1. Fencing.* USDI, BLM, Washington Office. Washington, D.C.

BLM. 1985b. *Northwest Area Noxious Weed Control Program. Final Environmental Impact Statement.* Oregon State Office, BLM, USDI. Portland, OR.

BLM. 1987. *Supplement to the Northwest Area Noxious Weed Control Program. Final Environmental Impact Statement.* Oregon State Office, BLM, USDI. Portland, OR. 151 pp.

BLM. 1989a. *Oregon Wilderness. Final Environmental Impact Statement.* 4 volumes. Oregon State Office, BLM, USDI. Portland, OR. 2190 pp.

BLM. 1989b. *Warner Lakes Plan Amendment for Wetlands and Associated Uplands. Plan Amendment and Environmental Assessment for the Warner Lakes Management Framework Plan and Decision Record.* USDI, BLM, Lakeview District. Lakeview, OR. 46 pp.

BLM. 1990a. *Livestock Grazing On Western Riparian Areas.* USDI, BLM. Public Information.

BLM. 1990b. *Warner Wetlands Area of Critical Environmental Concern (ACEC) Management Plan.* USDI, BLM, Lakeview District. Lakeview, OR. 57 pp.

BLM. 1991a. *Wilderness Study Report. Statewide Overview.* BLM-OR-EA-91-45-8561.6. Oregon State Office, BLM, USDI. 12 pp.

BLM. 1991b. *Vegetation Treatment on BLM Lands in Thirteen Western States. Final Environmental Impact Statement.* BLM-WY-ES-91-022-4320. Wyoming State Office, BLM, USDI.

BLM 1993. *Process for Asessing Proper Functioning Condition".* BLM Technical Reference 1737-9. USDI, BLM, Washington Office, Washington D.C.

BLM. 1994a. *Integrated Noxious Weed Control Program. EA#OR-93-013-01.* USDI, BLM, Lakeview District, Lakeview, OR.

BLM. 1994b. *Beaty Butte Allotment Evaluation Report.* USDI, BLM, Lakeview District. Lakeview, OR.

BLM. 1994c. *Process for Asessing Proper Functioning Condition for Lentic Riparian-Wetland Areas.* BLM Technical Reference 1737-11. USDI, BLM, Washington Office, Washington D.C.

BLM. 1994d. *Wild Horse Utilization Monitoring Plan/Schedule, Beaty Butte Herd Management Area.* USDI, BLM, Lakeview District files. Lakeview, OR.

BLM. 1995a. *Rangeland Reform '94 Environmental Impact Statement Record of Decision.* USDI, BLM. Washington, DC. 45 pp.

BLM. 1995b. *BLM Manual 8550. Interim Management Policy and Guidelines for Lands Under Wilderness Review.* USDI, BLM, Washington Office, Washington D.C.

BLM. 1995c. *Lakeview District Wild Horse Gather, EA#OR-010-95-10.* USDI, BLM, Lakeview District. Lakeview, OR. 98 pp.

BLM. 1996a. *Utilization Studies anc Residual Measurements.* Interagency Technical Reference, BLM/RS/ST-96/004+1730.

BLM. 1996b. *Sampling Vegetation Attributes.* Interagency Technical Reference. BLM/RS/ST - 96-002 + 1730.

BLM. 1997. *Recommended Versions of Standards and Guidelines for Rangeland Health and Guidelines for Livestock Grazing Management.* USDI, BLM, Oregon State Office. Portland, OR. 63 pp.

BLM and Forest Service. 1994. *Rangeland Reform '94 Final Environmental Impact Statement.* USDI, BLM, and USDA, FS. Washington, DC. 201 pp.

BLM and Forest Service. 1997. Interior Columbia Basin Ecosystem Project. *Eastside Draft Environmental Impact Statement.* USDI, BLM, Oregon/Washington State Office, and USDA, Forest Service, Pacific Northwest Region. Portland, OR. 2 Volumes.

Bureau of the Census. 1992. *USA Counties on CD-ROM.* USDC. Washington. D.C.

Bureau of Economic Analysis. 1993. *Regional Economic Information System, CD-ROM.* USDC, Washington, D.C.

Caldwell, M.M., J.H. Richards, D.A. Johnson, R.S. Nowak, amd R.S. Dzurec. 1981. *Coping with Herbivory: Photosynthetic Capacity and Resource Allocation in Two Semiarid Agropyron bunchgrasses.* Oecologia. 50:14-24.

Childs, S., S. Shade., D. Miles, E. Shepard, and H. Froehlich. 1989. *Soil Physical Properties: Importance to Long-Term Forest Productivity. Maintaining Long-Term Productivity of Pacific Northwest Forest Ecosystems.* Timber Press. Portland, OR.

Cowardin, L., V. Carter, F. Golet, and E. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* USDI, USFWS, Off. of Biol. Serv., Washington, DC. 103 pp.

Cushing, J.E. 1941. *The Columbian Sharp-tailed Grouse in Lake County, Oregon.* Condor 43:75.

Dayton, William. 1960. *Notes on Western Range Forbs.* U.S. Government Printing Office, Agriculture Handbook 161.

DeBano, L. 1991. *The Effect of Fire on Soil Properties.* Pp. 151-156 in: Proceedings - Management and Productivity of Western Montane Forest Soils; April 10-12; Boise, ID. Gen. Tech. Rep. INT-280. USDA, FS Intermountain Res. Stat., Ogden, UT.

DeLong, A.K. 1993. *Relationships Between Vegetativ Structuree and Predation Rates of Artificail Sage Grouse Nests.* MS Thesis. Oregon State University, Corvallis, Oregon.

DEQ 1992. Oregon Administrative Rules Chapter 340, Division 41, Table Malhuer Lake Basin 340-41-882.

DEQ 1994/1996. *Oregon Department of Environmental Quality's 3039d) List of Water Quality Limited Waterbodies and Oregon's Criteria Used For Listing Waterbodies.* July 1996.

DLCD. 1995. *Oregon's Statewide Planning Goals. 1995 Edition.* Salem, OR. 36 pp.

FS. 1996. *Status of the Interior Columbia Basin. Summary of Scientifc Finding.* USDA, FS, Pac. NW Res. Stat., Portland, OR. 144 pp.

Franklin, Jerry F. & C.T. Dyrness. 1973. *Natural Vegetation of Oregon and Washington.* Pacific NW Forest and Range Experiment Station, USDA, FS Gen. Tech. Report pnw-8.

Gregg, M.A., J.C. Crawford, M.S. Drut, A.K. DeLong. 1994 *Vegetational Cover and Predation of Sage Grouse Nests in Oregon*. J. Wildlife Management, 58:162-166

Haynes, R., R. Graham, and T. Quigley, eds. 1996a. *A Framework for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basins*. USDA, FS, Pac. NW Res. Stat., Portland, OR. 46+ pp.

Haynes, R., R. Graham, and T. Quigley, eds. 1996b. *Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin and Portions of the Klamath and Great Basins*. USDA, FS, Pac. NW Res. Stat., Portland, OR. 197+ pp.

Hubbs. C.L. and R.R. Miller, 1948. *The Zoological Evidence: Correlation Between Fish Distribution and Hydrographic History in the Desert Basins of Western United States*. Pp. 17-166 in The Great Basin with emphasis on glacial and postglacial times. Bull. Univ. Utah, 38.

Hungerford, R. M. Harrington, K. Ryan, and G. Niehoff. 1991. *Influence of Fire on Factors that Affect Site Productivity*. Pp. 32-50 in: Proceedings - Management and Productivity of Western Montane Forest Soils; April 10-12; Boise, ID. Gen. Tech. Rep. INT-280. USDA, FS Intermountain Res. Stat., Ogden, UT.

Kagan, J. and S. Caicco. 1996. *Manual of Oregon Actual Vegetation*. Oreg. Nat. Herit. Prog. Portland, OR.

Lake County. 1979. *Land Use Atlas. A Comprehensive Plan Supplement*. Prep. by Lynn D. Steiger & Associates, Inc. for Lake Co. Planning Dept., Lakeview, OR. 141 pp.

Lake County. 1983. *Amendments to the Lake County Atlas, a Supplement to the Lake County Comprehensive Plan*. Lake Co. Planning and Building Office, Lakeview, OR. 21 pp.

Lake County. 1989a. *Comprehensive Land Use Plan, Lake County, Oregon. Housing, Economic, and Population Elements, Goal Exceptions and Buildable Land Inventories*. Orig. prep. by Lynn D. Steiger & Associates, Inc., Revision prep. by A. R. Brown Planning Consultant for Lake Co. Planning Dept., Lakeview, OR. 197 pp.

Lake County. 1989b. *Lake County Zoning Ordinance*. Lake Co., Lakeview, OR. 146 pp.

Lake County. 1989c. *Lake County Land Development Ordinance of 1980*. Lake Co., Lakeview, OR. 41 pp.

Lake County. 1992. *Lake County Emergency Ordinance and Interim Public Land Management Plan*. Lake Co., Lakeview, OR. 17 pp.

Lake County. 1994. *Lakeview, Lake County, Oregon*. 11 pp.

Mueggler, W.F. 1972. *Influence of Competition on the Reponse of Bluebunch Wheatgrass to Clipping*. Journal of Range Management. 25:88-92

Natural Heritage Advisory Council to the State Land Board. 1993. *Oregon Natural Heritage Plan*. Salem, OR. 158 pp.

OSU. 1995. *Lake County Economic Report: An Input-Output Analysis*. April 1995

Platts, William S. 1984. *Proceedings of the Bonneville Chapter of the American Fisheries Society*, Archer, Donald L., ed. pp. 78-84

Platts, William S. 1991. In *Influences of Forest and Rangeland Management on Salmonid Fishes and Their Habitats*, William R. Meehan Editor, American Fisheries Society Special Pub.

Proceedings of BLM Workshop: "*The Ecology and Management of Microbiotic Soil Crusts in the Great Basin and Snake River Plain*" Oct.29-30, 1996. Boise, Idaho.

REO. 1995. *Ecosystem Analysis at the Watershed Scale*. Version 2.1. Regional Ecosystem Office. Portland, OR. 188+ pp.

Richards, J.H., 1984. *Root Growth Response to Defoliation in Two Agropyron Bunchgrasses: Field Observations with an Improved Root Periscope*. Oecologia. 64:21-25.

St. Clair, Larry L. and Johansen, Jeffery, R. 1993. *Introduction to the Symposium on Soil Crust Communities*. Great Basin Naturalist. Vol. 53.

Stern, M., C. Tait, E. Mulkey, A. Munhall and W.H. Pyle. 1993. *Inventory of the Sheldon Tui Chub in Lake County, Oregon 1993*. Unpublished report prepared for BLM, Lakeview District. Lakeview, OR.

TNC. 1992. *Final Report. Natural Area Inventory for the Lakeview Resource Area, Lakeview District, Bureau of Land Management.* The Nature Conservancy, Portland, OR. 25 pp.

Turner, B. D. Chamberlain, G. Delaney, R. Hathaway, D. Knutson, F. Obllermiller, J. Tanaka, B. Eleveld, and W. Riggs. 1996. *Enterprise Budget.* EM-8656 Oregon State University. Eugene, OR. 4 pp.

USFWS. 1980. *Sheldon National Wildlife Refuge Renewable Natural Resource Management Plan, Final EIS.* USDI, USFWS, Reg. 1. Portland, OR.

USFWS. 1994a. *Hart Mountain National Antelope Refuge Comprehensive Management Plan. Final Environmental Impact Statement.* USDI. USFWS. Lake County, OR.

USFWS. 1994b. *Record of Decision, Hart Mountain National Antelope Refuge Comprehensive Management Plan.* USDI, USFWS, Lake County, OR. 34 pp.

Williams, J. E. and C. E. Bond. 1981. *A New Subspecies of Tui Chub (OSTEICHTHYES: CYPRINIDAE) from Guano Basin, Nevada and Oregon.* Southwestern Naturalist 26(3):223-230.

Winward, Alma H. 1994. *Management of Livestock in Riparian Areas.* Natural Resources and Environmental Issues. Vol. 1 pp 49-52.

Westenskow-Wall, K.J., W.C. Krueger, L.D. Bryant and D.R. Thomas. 1994. *Nutrient Quality of Bluebunch Wheatgrass Regrowth on Elk Winter Range in Relation to Defoliation.* Journal of Range Management. 47:240-244.

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BUREAU OF LAND MANAGEMENT
Lakeview Resource Area / Lakeview District Office
1000 South 9th Street
Lakeview, Oregon 97630

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Permit No. G-76

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LAKEVIEW DISTRICT
1997

BEATY BUTTE ALLOTMENT MANAGEMENT PLANNING AREA

MAP 1

Existing Situation

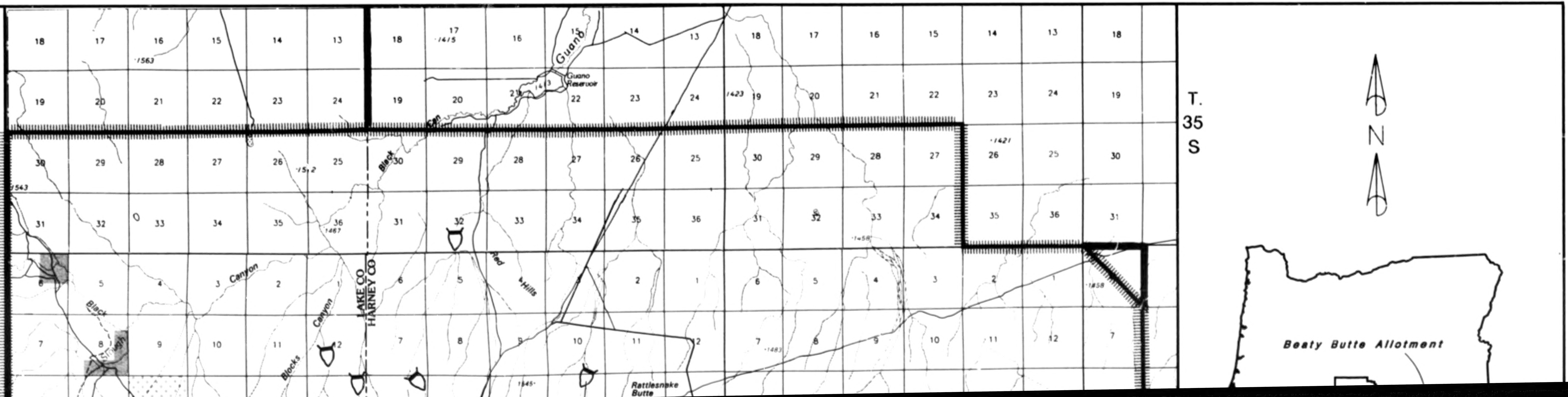
LEGEND

☐ Bureau of Land Management Administered Lands

▨ U.S. Fish and Wildlife Service

░ State Land

☐ Private



Existing Situation

RNA 4 Hawk Mountain #2
▨ Beaty Butte Herd Management Area Boundary
COMMON PASTURE
Highland Spring
Rose Brier Spring
2-84
RNA 1
RNA 2
1-132
GUANO CREEK PASTURE
Buckaroo Pass
Ryegrass Valley
Shallow Lake
JACK LAKE PASTURE
Moon Lake
West Lake
HART MOUNTAIN NATIONAL ANTELOPE REFUGE
CLOVE PASTURE
SPAULDING PASTURE
Spaulding Reservoir
SAGE HEN
GUANO VALLEY
BURNS
Butcher Flat
JEEP TRAIL
Hills
Funnel Canyon
Little Juniper Mountain
JACK CREEK PASTURE
GUANO LAKE PASTURE
1-139
CANYON
South Corral Spring
RIM
2-82
Roux Spring
Petroglyphs
The Potholes
Bald Mountain
HAWK VALLEY SEEDING PASTURE
Hawks Valley
Scotts Cache Spring
Tank
Well
T. 37 S.
T. 38 S.
T. 39 S.
T. 37 S. T. 38 S.
T. 38 S. T. 39 S.

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LAKEVIEW DISTRICT
1997

BEATY BUTTE ALLOTMENT MANAGEMENT PLANNING AREA

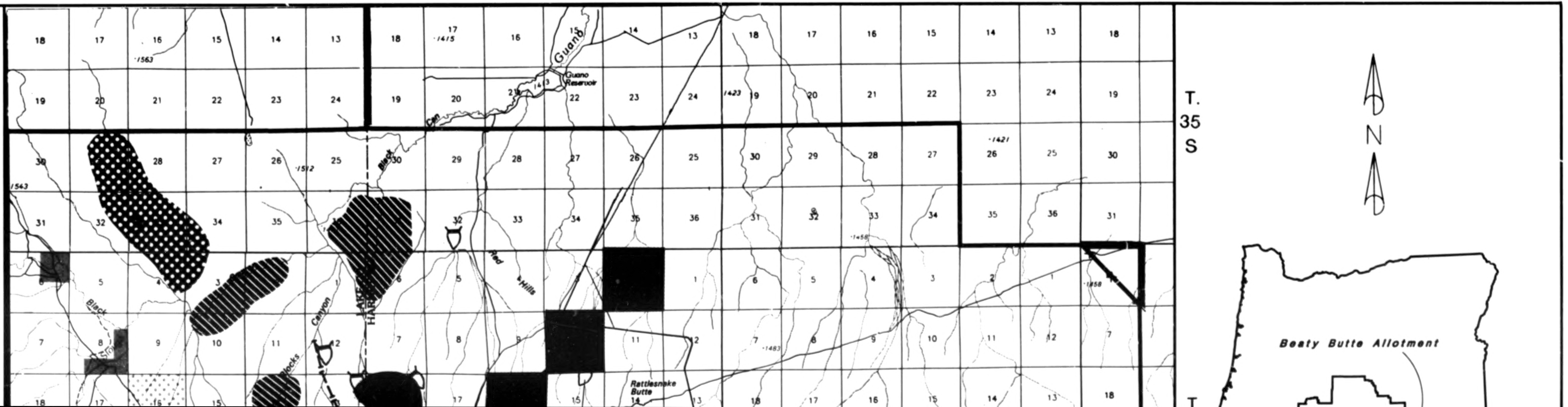
MAP 2

Alternative 1

(No Action)

LEGEND

☐	Bureau of Land Management Administered Lands
▩	U.S. Fish and Wildlife Service
⬚	State Land
☐	Private



Alternative 1
(No Action)

COMMON PASTURE
GUANO CREEK PASTURE
JACK LAKE PASTURE
CLOVE PASTURE
HART MOUNTAIN NATIONAL ANTELOPE REFUGE
SPAULDING PASTURE
JACK CREEK PASTURE
GUANO LAKE PASTURE
BURNS
HAWK VALLEY SEEDING PASTURE
VALLEY
RIM
SAGE HEN CANYON
Shallow Lake
Butcher Flat
Rose Brier Spring
Highland Spring
Mudhole Spring
Jacob Reservoir
Clover Lake
Burr Lake
Guano Creek
Weed Lake
Little Juniper Mountain
Spalding Reservoir
South Corral Spring
Petroglyphs
The Potholes
Sage Hen Butte
Blizzard Gap
MC Reservoir
Little Reservoir
Acty Spring
Hawks Valley Airstrip
Scotts Cache Spring
Juniper Spring
Round Spring
Well
Funnel Canyon
Basque Hills
JEEP TRAIL
T. 37 S. T. 38 S.
T. 38 S. T. 39 S.
T. 37 S.
T. 38 S.
T. 39 S.
T. 40

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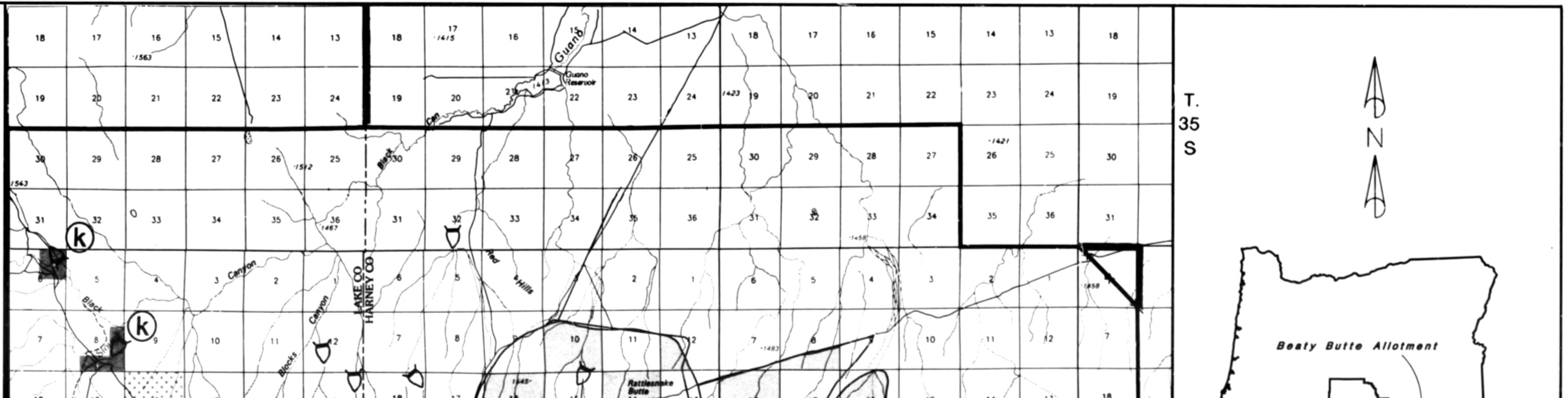
1997

BEATY BUTTE ALLOTMENT MANAGEMENT PLANNING AREA

MAP 3
Alternative 4 (Preferred Alternative) and Alternative 2

LEGEND

- ☐ Bureau of Land Management Administered Lands
- ▨ U.S. Fish and Wildlife Service
- ░ State Land
- ☐ Private



Alternative 4
(Preferred Alternative)
and Alternative 2
LEGEND

☐ Bureau of Land Management Administered Lands
▨ U.S. Fish and Wildlife Service
░ State Land
☐ Private
▬ District Boundary
— Beaty Butte Allotment Boundary (600)
— — Existing/Proposed Pasture Boundary
ꟷꟷꟷ Rimrock
✕✕✕ ✕ Existing/Proposed Fenceline
├─┤ ├ ┤ Existing/Proposed Pipeline
ᗡ ᗡ Existing/Proposed Reservoir/Water Development
○ ○ Existing/Proposed Dirt Tank
▬ Proposed Water Trough
▭ Proposed Cattleguard
‹ ‹ ‹ Proposed Checkdam
(4) Proposed Prescribed Burn Area (See text for description)
ⓕ Proposed Development (See text for description, all developments except project D are the same for both alternatives)

NORTH PASTURE
JACK LAKE PASTURE
(Riparian Under Alternatives 2 and 3)
(Exclosure Under Alternative 4)
GUANO CREEK PASTURE
JACK LAKE SOUTH PASTURE
CLOVE PASTURE
HART MOUNTAIN NATIONAL ANTELOPE REFUGE
SPAULDING PASTURE
CORRAL LAKE PASTURE
GUANO LAKE
JACK CREEK PASTURE
SOUTH PASTURE
SOUTHWEST PASTURE
SOUTHEAST PASTURE
HAWK VALLEY SEEDING PASTURE
BURNS
GUANO VALLEY
SAGE HEN CANYON
RIM
Buckaroo Pass
Shallow Lake
Ryegrass Valley
Butcher Flat
Funnel Canyon
Rose Brier Spring
Highland Spring
Reed Spring
Spaulding Reservoir
Little Juniper Mountain
Moon Lake
Wood Lake
Jacob Reservoir
Petroglyphs
Bald Mountain
Acty Spring
Hawks Valley
Sage Hen Butte
Blizzard Gap
Roux Spring
JEEP TRAIL
A
B
C
D
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b
d
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m
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11
T. 37 S.
T. 38 S.
T. 39 S.
T. 40

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U.S. DEPARTMENT OF THE INTERIOR
Bureau of Land Management

LAKEVIEW DISTRICT
1997

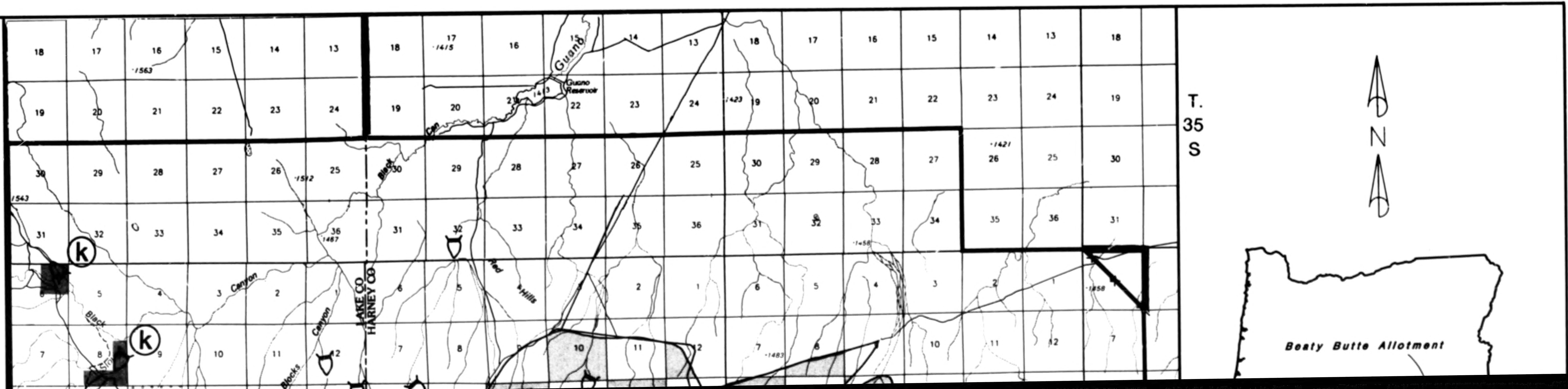
BEATY BUTTE ALLOTMENT MANAGEMENT PLANNING AREA

MAP 4

Alternative 3

LEGEND

☐	Bureau of Land Management Administered Lands
■	U.S. Fish and Wildlife Service
⁙	State Land



MAP 4
Alternative 3

LEGEND

☐	Bureau of Land Management Administered Lands
■	U.S. Fish and Wildlife Service
▨	State Land
☐	Private
▬	District Boundary
—	Beaty Butte Allotment Boundary (600)
— —	Existing/Proposed Pasture Boundary
┴┴┴┴	Rimrock
✕✕✕	Existing/Proposed Fenceline
├─┤	Existing/Proposed Pipeline
◁	Existing/Proposed Reservoir/Water Development
○ ○	Existing/Proposed Dirt Tank
▬	Proposed Water Trough
▬	Proposed Cattleguard
‹ ‹ ‹	Proposed Checkdam
4	Proposed Prescribed Burn Area (See text for description)
ⓕ	Proposed Development (See text for discription)

JACK LAKE PASTURE
(Riparian Under Alternatives 2 and 3)
(Exclosure Under Alternative 4)
GUANO CREEK PASTURE
NORTH PASTURE
JACK LAKE SOUTH PASTURE
CLOVE PASTURE
HART MOUNTAIN NATIONAL ANTELOPE REFUGE
SPAULDING PASTURE
CORRAL LAKE PASTURE
SOUTH PASTURE
GUANO LAKE PASTURE
JACK CREEK
SOUTH PASTURE
HAWK VALLEY SEEDING PASTURE
BURNS
GUANO VALLEY
VALLEY
RIM
CANYON
JEEP TRAIL
Buckaroo Pass
Ryegrass Valley
Shallow Lake
Butcher Flat
Funnel Canyon
Bald Mountain
Little Juniper Mountain
Moon Lake
Weed Lake
Jacobs Reservoir
Blue Burr Lake
Hot Springs Camp
Highland Spring
Rose Brier Spring
Reed Spring
North Highland Spring
Wilson Spring
South Corral Spring
Rouse Spring
Acty Spring
Scott Cache Spring
Petroglyphs
The Potholes
Little Reservoir
MC Reservoir
Hawks Valley
Scep
Well
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T. 38 S.
T. 39 S.
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